

# **SYSTEM AND METHOD FOR SUPPORTING PARTICIPANT SPECIFIC INCENTIVES AND PROMOTIONS**

## **FIELD OF INVENTION**

The present invention relates to incentive and promotional programs,  
5 including a personal communication and electronic commerce system for use by  
participating users and participating merchants in connection with incentive and  
promotional programs in the Network Economy. More specifically, the present  
invention relates to an incentive system and process that can be used in conjunction  
10 with other incentive systems to more specifically incentivize desired participant  
action. The process is preferably implemented through the use of one or more  
programmable computers and personal communication devices such as digital  
cellular phones and data communication devices in a cellular network.

## **BACKGROUND OF THE INVENTION**

The emergence of a fully networked economy now seems inevitable because of  
15 three recent trends: 1) software power is increasing and becoming less expensive  
largely due to the use of object oriented programming; 2) hardware power is  
increasing and becoming less expensive; and 3) communication and network power  
is increasing and becoming less expensive as a result of the Internet and related  
technologies. In a fully networked economy there are opportunities for new  
20 incentive and promotional programs that take advantage of increased software,  
hardware and communication power of the Network Economy

Customer award programs have been known for years. Early examples  
include programs such as the S&H Green Stamp programs and the like. Similarly,  
there are various known employee incentive programs for promoting the sales of  
25 products and services. Known incentive programs are often cumulative, that is  
awards are earned through the accumulation of "points" (which are referred to by

different names such as credits, miles, dollars, stamps, coupons, etc.). Rules are established to determine how many points are awarded for each participant action and how many points participants must accumulate to be entitled to certain rewards. A sales incentive program, for example, might award a certain number of points to participants for selling a designated dollar volume or quantity of products. When the participant accumulates a predetermined number of points during a certain time period, the participant is eligible for an award. The value of the award may also increase with increasing number of accumulated points. In known programs, the accumulated points may be used to purchase merchandise illustrated in a company catalogue, or to earn vacations. In some instances, the points are converted to a direct cash equivalent, which is distributed to the individual at predetermined time periods.

In the past 20 years, incentive programs have become more sophisticated and ubiquitous. Airline frequent flyer programs were among the first examples of computer-implemented customer incentives. Frequent flyer programs proved to be so successful building customer loyalty that it is practically impossible to operate an airline that does not have a frequent flyer program. With the aid of computers, incentive programs have been extended to credit card, debit card, smart card and point of sale incentive programs.

The increased availability of information technology, changes in regulations and recognition of opportunities available in incentive programs, have led many financial institutions to offer incentives to encourage participant activity that is deemed profitable by the financial institution, most commonly credit card use examples are known incentive programs include the American Airlines Co-Branded Visa Card and similar cards that are co-branded with an airline's logo. In such programs, the cardholder earns "frequent flyer points" through use of the card. In 1986, the Sears Financial Network introduced the Discover Card, which offered customers monetary rewards for using the credit card. Recently, similar incentive

programs have been proposed for point of purchase transactions, debit card transactions and transactions over the Internet. Some known programs offer participants choices with regard to redemption of "points."

5 The American Express member reward program allows card users to accumulate points within a separate account. The points may be redeemed, for example, for a variety of awards and may be transferred into the frequent flyer programs of certain member airlines.

10 More recently card programs such as the GM card, the Ford card and the Driver's Edge card programs have been introduced. Under these programs, a co-branded card is imprinted with the sponsor's logo. The customer earns a rebate (e.g., 5%) for every qualified purchase of a wide variety of goods. Almost all goods are included, except for cash advances, transferred balances from other card accounts, credits, ATM withdrawals, fees, finance charges, and net purchases made after a maximum annual rebate has been earned. Promotional rebates, however, can be earned above and beyond the rebate cap. A customer may earn up to a  
15 predetermined amount, e.g., \$1000 in rebates every year (every 12 consecutive months from the date the customer becomes a card member) and a maximum (e.g., \$3,000 over a set period such as 3 consecutive years.) The customer can also earn an extra five percent promotional rebate when using the card at other sponsor  
20 companies (e.g., participating Hertz or Texaco locations, for example). Each rebate expires at the close of the calendar quarter 5 years after it is earned. The financial institution's system automatically keeps track of the rebates and a rebate summary appears on the customer's monthly billing statement. Customers may use rebates toward the purchase or lease of an eligible car.

25 Known cash rebate programs are different from pure "accumulation" programs. Sears issued the Discover card, co-branded with "Sears Financial Services" imprint on its face, in 1986. The card included an incentive program under which a user's account was credited with a 1% cash rebate on all purchases.

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5 If desired, the rebates were automatically credited to the card account. Other  
similar prior art incentive programs include the Execu-Charge Card, Citibank's  
CHOICE card and the J.C. Penny card and "Penny Points" program described in an  
American Banker article of September 8, 1996. The Penny Points program involved  
the use of co-branded cards to earn "Penny Points," which could be redeemed for  
future discounts on J.C. Penny merchandise. For every five dollars in purchases  
spent using the card, the customer earned one Penny Point. When the customer  
accumulated 200 points, a 15% rebate certificate was issued and automatically  
included in the customer's statement. The certificate could be used for a 15%  
10 discount on merchandise at any J.C. Penny store. There are also a number of prior  
art patents directed to computer implemented incentive programs.

15 U.S. Patent No. 5,025,372, for example, discloses a system and method for  
administration of an incentive award program through the use of credit cards. The  
specification describes an incentive program that would be used primarily in  
connection with typical trade incentive programs in which companies sought to  
stimulate sales or other business by means of incentive programs directed to  
employees or sellers of the company's products. Other portions of the specification  
suggest that the invention might be useful in other contexts that are now known,  
including an incentive award program for selling a certain quantity of a sponsor's  
20 product using computer processing, programming and printing for assignment and  
issuance of credit instruments to participants. In such programs, monetary  
amounts are awarded to participants for the purchase of a virtually unlimited  
variety of goods and services through the participants' credit instrument accounts  
depending on the participants achieving a certain level of performance.

25 The above-mentioned U.S. Pat. No. 5,025,372 focuses on the issuance of  
credit instruments to participants in the program. The incentive award program in  
uses computer processing, programming and printing for the assignment and  
issuance of such credit instruments including monetary amounts awarded to the

participants for use in the participant's credit instrument account. Participants identifying information and credit instrument account numbers are stored in memory. The incentive program can then be divided into multiple time periods. The levels of performance are calculated and assigned for each participant for a monetary amount to be available for expenditure through the participant's credit instrument. The trade name or trademark of the company sponsoring the incentive program may also appear on the physical credit instrument and on statements provided to participants. Messages printed on the reports themselves or on other documents mailed to participants stimulate and encourage the participants to perform under the incentive program.

US Patent No. 4,750,119 describes a purchasing system with a rebate feature. The system is utilized by subscriber-purchasers, vendors providing goods and services, a future benefit guarantor such as an insurance company selling annuity contracts and in some cases an escrow agent. The purchasing system allows for the input of purchase orders from the subscriber-purchasers for selected goods and services and correlates the transfer of funds from those purchaser-subscribers to the various vendors selling the selected goods. In one instance, the transfer occurs between the subscriber-purchasers and the escrow agent. The future benefit guarantor supplies a rebate factor, which is input into the system. The system then computes and reports a rebate, which is due in the future to each subscriber-purchaser from the future benefit guarantor. The rebate is based upon cost of the individually selected goods and services and the rebate factor. The system provides instructions to pay the vendors for the selected goods and services and to pay the future rebate guarantor a premium representing the purchase price of the future guaranteed rebates. Preferably, the premium is paid on a daily basis to the guarantor and a group annuity contract is funded until the end of the fiscal year. At that time, the system further instructs the guarantor to issue individual future guaranteed rebate contracts to each purchaser-subscriber based upon the total rebates or total purchases over the accounting period.

U.S. Patent No. 5,287,268 describes a centralized system of accumulating cash value for consumers based upon point-of-sale transactions with multiple merchants is disclosed wherein for each transaction, the consumer's account number (such as the Social Security number) which may be different from the consumer's credit card account number, for example, is transmitted to a central system along with data identifying the merchant and a credit value for the transaction. The credit value may be based upon predetermined incentives associated with the transaction such as coupons, rebates or discounts, and/or upon a credit rate determined by the merchant applied to the amount of the transaction. At the central location, a cash value for that consumer is incremented by the credit value and a bill value for that merchant is similarly incremented. Periodically, the merchants are billed for the accumulated bill value or credited for any third party incentive amounts confirmed at the central location. Also, at selected intervals, consumers are given access to their respective accumulated cash values by either a check in that amount or through a funds dispensing electronic terminal access or the like.

Under this program a consumer, upon making a purchase from a merchant will obtain a credit value equal to a portion of the amount of the purchase. The portion which is to be credited is determined at the time of sale based on a rate which may be selected by that merchant irrespective of the rate selected by other merchants and independent of a central authority. Alternatively, the rate may be based in whole or in part upon a pre-assigned rebate or coupon value such as from a third party, or a combination of pre-assigned and merchant selected factors. The credit value is then transmitted to a central system communicating with all the participating merchants, whereat the credit value is added to a cash value maintained for that consumer's account. At pre-selected intervals, such as on the occasion of the consumer's birth date, that consumer is given access to cash in an amount equal to the accumulated cash value. The credit value may also be added to a bill value maintained in an account for the involved merchant. The merchant may

be periodically billed the accumulated bill value amount where consumer credit values are discounts or rebates from the merchant. The credit value is determined based either upon a coupon or rebate value amount input by the merchant at the time of sale and/or upon the amount of the sale and the credit rate as input by the merchant. The determining credit value is then transmitted to the central system along with the consumer's account number and birth date whereat the credit value is added to the cash value maintained in the consumer account associated with the unique account number and the birth date. The consumer may then access the money through an electronic terminal for dispensing funds such as a bank terminal or the like which communicates with the central system to issue funds when the authorization is present. Alternatively, the central system may issue checks to the consumers.

U.S. Patent No. 5,734,838 describes a database computer architecture for managing an incentive award program and checking float of funds at time of purchase and an advanced intelligent network based information distribution system including a central office switching system connected to communication lines including at least one service switching point for selectively providing switched communications between the communication lines, a network controller arranged for selectively providing control data to effect land line communications, and arranged separately from the central office switching system, an incentive award computer system provides an award to users participating in an incentive award program. The incentive award computer system includes a request transaction processing computer system receiving an electronic transaction by a user, determining whether the electronic transaction is a reward eligible transaction, and generating a transaction request when the electronic transaction is determined to be the reward eligible transaction. In addition, a points calculator processing computer system is provided that determines a reward responsive to the reward eligible transaction represented in the transaction request, assigns the reward to a user record responsive to reward criteria, and generates a reward record

representing the reward. The incentive award computer system further includes a points assigning and reporting processing computer system that generates reports and provides access to the user record and the reward by the user responsive to predetermined criteria.

5 U.S. Patent No. 5,689,100 describes a debit card system and method for implementing incentive award program for a customer having participants. A plurality of debit cards, each assigned to one participant and having a unique account number corresponding to an award account of the participant is part of the system. A bank filter processor accesses program data including data identifying  
10 the authorized unique account numbers of the participants, data identifying the authorized merchants and data indicating the balance in each participant's award account. The filter processor compares this program data to the following transaction data: the initiating account number of the card initiating the transaction, the merchant identification data of the initiating merchant, and the data regarding the amount of the initiated transaction. The filter processor  
15 generates validating data for the transaction when the evaluated transaction data indicates that the transaction has been initiated by an authorized merchant using the unique account number of one of the participants having a sufficient balance in the participant's corresponding award account to cover the transaction. Otherwise,  
20 invalidating data is generated.

Computer implemented incentive programs have also been used in casino gaming. For example, U.S. Patent No. 5,795,225 describes a method and apparatus for including a progressive jackpot component in a live casino table game. In addition to playing a live casino table game, each player makes an additional wager  
25 at the beginning of each hand that makes that player eligible to win all or part of a jackpot. If during the play of the hand a player is dealt a predetermined arrangement of cards, the player wins a preselected percentage of the jackpot amount. The jackpot is progressive in that un-won amounts of the jackpot carry



over to the next hand. Apparatus is provided to receive each gaming token wagered for the jackpot component, to increment the jackpot meter which displays the jackpot amount, to decrement the jackpot meter whenever a winning hand is paid and to reset the apparatus for the next hand.

5 U.S. Patent No. 5,915,244 describes a computerized incentive program having plateau pricing and a personalized bank-account system, and permitting remote award redemption is disclosed. In one embodiment of the invention, a computerized incentive-program system includes a pricing component, which converts a price of each of a plurality of awards into award levels such that each  
10 price within a particular price range is converted to a single award level. The system also includes a bank account component, which tracks an award balance for each of a plurality of participants and permits each participant to redeem at least a portion of the award balance for an award. Finally, the system includes a certificate component, which permits a program participant to remotely redeem a certificate  
15 having a value at least a portion of the award balance by identifying a serial number unique to the certificate, upon conclusion of the incentive program.

The present invention also relates to online incentive programs. Recently Web loyalty programs have been introduced in recognition of the facts that a) online consumers want to be rewarded for their loyalty, and b) profit can be derived from  
20 loyal web site users through advertising and joint marketing promotion. One such program, known as ClickRewards, rewards consumers with frequent flyer miles on all of the major U.S. airlines. Participants earn ClickMiles for completing activities on sponsor's web sites such as making a purchase to registering software. Participant's can then exchange their ClickMiles for frequent flyer miles on their  
25 favorite airlines, as well as other valuable rewards. In addition, ClickMiles can be combined with offline frequent flyer miles, making them even more valuable.

The underlying system is described in US Patent No. 5,774,870. This patent describes a fully integrated on-line frequency award program. A user may access

the program on-line and may browse a product catalog for shopping. The user may electronically place an order, upon which the program automatically checks the user's credit and electronically issues a purchase order to the supplying company. The program also calculates award points, updates the award account of enrolled users, and communicates that number of awarded points to the user. Enrolled users may browse through an award catalog and electronically redeem an amount of awarded points towards an award. The program then electronically places an award redeeming order with the fulfillment house and updates the user's award account.

Other programs are described in industry publications, including, for example

Moore, "Technology Explosion Shapes Marketing's Future", Bank Marketing, v24n5 pp:24-27, May 1992, Dialog file 15, Acc. No. 00615749.

Arndorfer, "More groups enhance credit cards to get up to speed in a tight race (credit unions offer promotions) , American Banker, v160, n174, p. 22(1) , Sep. 11, 1995, Dialog file 148, Acc. No. 08123473.

"Supermarket Update: Bank One Ready to Unite Electronic Payments with Vision value Shopper Cards", POS News, Sep. 1, 1993, Dialog file 16, Acc. No. 04590660.

"A little Battle Royal in the UK", Credit Card Management, Nov. 1994, p. 90, Dialog file 16, Acc. No. 05388649.

"Frequent-Shopper Plans Get a Chipper Look", POS News, Jan. 3, 1995, Dialog file 636, Acc. No. 02630357.

Fickenscher, "Star bank in Cincinnati offering air miles perk . . . ", American Banker, v159, n176, p. 23(1) , Dialog file 148, Acc. No. 07816374.

Kleege, Stephen discloses an article entitled "In star Bank's flexible flier program, any airline will do", American Banker, v159, n1, p. 12(1) , Jan. 3, 1994. Dialog file 148, Acc. No. 07161362.

"Bank of Hawaii offers travel bonus", Honolulu Adviser (Honolulu, HI, US) p. C1, Mar. 14, 1996. Dialog file 635, Acc. No. 0690801.

"Business Travel: Airline perks in peril . . . ", Financial Times (London) Jul. 11, 1994, p. 14, Dialog file 16, Acc. No. 05160615.

"Another chance for Chip cards", Smart cards may be ready to make headway in card-based payment systems, Credit Card Management, Sep., 1993, p. 30, Dialog  
5 file 16, Acc. No. 04679883.

"Point Blank Video Library: Uses 'Video Incentive Program' to boost video rentals", Video Store, Mar. 20, 1992, p. 46, Dialog file 16, Acc. No. 03701747.

"Debit Card News Debit Issuer Flies Right with Reward Plan", Bank Network News, Jan. 27, 1995, Faulkner & Gray, Inc., Dialog file 636, Acc. No. 02657159.

Notwithstanding the many existing programs that are currently known,  
there are problems with existing incentive programs. Known systems do not take  
full advantage of the personal communication and electronic commerce systems  
available for use by participating users and participating merchants in the Network  
Economy and are not capable of incentivizing individual participants in a precise  
way. Moreover, cumulative awards do not sharply discriminate between true brand  
loyalty and high demand. Instead, a group or herd approach is taken and  
incentives are equal for a large class of participants. Thus, a high volume user can  
benefit from participating in a number of competitive programs (e.g., programs  
offered by different airlines) without showing loyalty to any one sponsor. It is this  
type of high volume user that program sponsors find most desirable, however. The  
present invention provides a competitive advantage by allowing targeted incentives  
that can be used, for example, to capture the full loyalty of high profit customers.

## **SUMMARY OF INVENTION**

The present invention provides a system and method that can be used both to  
enhance existing award programs and to support development of entirely new  
incentive programs. The system and method is preferably implemented by one or

more computers programmed to perform processes according to the present invention.

An important aspect of the present invention is the use of an individual participant redemption rate that is separately calculated for each participant in the incentive program.

For clarity of description, the two-component incentive program of the present invention may be considered as consisting of two distinct incentive programs operating in parallel. The first is a "Base Program," which can be modeled based on any known "points" type incentive program. The second of the two programs is a "Variable Redemption Rate Program" under which the value of points accumulated under the first program (Base Program) can vary according to a distinct set of rules. Though these programs can be considered as distinct from one another, it is possible to structure the program so that the distinction is not evident to the participants.

Under the base program, each participant within the system has an identity, and an ability to participate in the Base Program (or existing award programs) so as to earn "points," which can be referred to under other names, including miles, dollars, credits, etc. Points are awarded based upon rules that are widely applied across a wide class of participants. Thus for example, everyone flying the airline shuttle between Washington, D.C. and New York earns 1,000 miles for the flight regardless of whether the participant is a one-time user that had no choice but to take the flight or a weekly flyer whose continued patronage would be very valuable.

Most "frequent flyer" programs by their very nature reward frequent customers. In particular, the programs are cumulative so that awards accumulate over time. In some programs there are bonuses for passengers that travel a certain number of segments within a prescribed period. Conversely, many programs "expire" points after a certain period of time, without regard to the loyalty of the

customer. All of these programs are ham handed ways of attempting to incentivize participant action with greater precision and create more intense participant loyalty.

In contrast, the addition of a variable redemption rate program component according to the present invention provides an incentive system and process that allows precise encouragement of specific participant action and makes it possible to create more intense participant loyalty. In an incentive system and process according to the present invention, participant earnings, whether miles, cash or points, are treated as base points (BP) that are multiplied by a customer specific redemption rate (R) to convert the base points into participant rewards.

The two component incentive program is multi-dimensional in several respects. First, the two completely distinct reward programs' components - the Base Program for earning points and the Variable Redemption Rate program for adjusting each participants individual redemption rate - are fundamentally distinct since the base awards program is cumulative whereas as the redemption rate program is transitory in that the redemption rate can be adjusted up or down very quickly (or slowly) depending on participant action or inaction. This introduces an opportunity to incentivize the timing of participant actions that is well beyond anything that can be done with conventional incentive programs. Though the reward program components are distinct from one another, both components can apply to the same participant action so as to enhance or dampen the incentives in a single program. Since each program component can affect the value of rewards offered by the other program component, there is an opportunity to achieve tremendous synergism by optimizing participant action.

As an example, consider that a loyal customer in a conventional program is likely to have accumulated many "points" in that program. Now consider the incentive that would be created by the possibility of increasing the redemption value of all of these accumulated points by 50% or even 100%. The combined

results of the two programs thus offer the ability to provide the greatest incentive to the most important (profitable) participants.

The ease of quickly reducing a participant's redemption rate can be used to reward participant actions such as brand loyalty, profitability, consistency and frequency of use, that are desirable from a sponsor's vantage point. The variable redemption rate can also be used for special promotions or to compensate participants for poor performance by the sponsor. As one example, the variable redemption rate can be used to gain and maintain participant loyalty by rewarding consistency with incremental increases and discouraging lapses in loyalty through punitive decreases in redemption rate. Moreover, when used in conjunction with technology, such as a smart card that allows the program administrator to monitor the participants actions more closely, it is possible to structure a program that creates a disincentive (such as a reduction in redemption rate) for shopping at a competitor's store or buying a competitor's product. Other applications, some of which are described below, will be apparent to those skilled in the art.

The present invention is applicable to existing reward programs such as airline reward programs, credit card reward programs, point of purchase reward, internet loyalty reward programs and like. Base points (BP) can be any form of accumulated reward, including for example airline miles, cash awards, ClickRewards, points, accumulated winnings, accumulated losses, etc.

As noted above, base points earned are converted to reward points based upon a customer specific redemption rate according to the following formula:

$$BP * RR = RP$$

The Redemption Rate (RR) is transitory in that the redemption rate (RR) can be adjusted up or down very quickly (or slowly) depending on participant action or inaction. The customer specific redemption rate (RR) has a base value (BRR) such as 1:1 for a new purchase, but RR can be incremented or decremented to reward

certain desirable participant action and penalize or create a disincentive for certain undesirable activity.

In accordance with another aspect of the present invention, the starting redemption rate or base redemption rate (BRR) may be the same for all participants or may be different for different participants. This offers the possibility of rewarding participants in yet another way by awarding customers with a permanent or temporary base redemption rate that is greater than 1:1. This additional feature is made possible by the fact that a base redemption rate is associated with each participant to allow calculations based on the base redemption rate.

The system architecture supporting the system can vary widely from a centralized system, a system that runs in parallel to an existing reward program, a completely integrated reward system, a distributed network system employing personal chip technology and an object oriented system.

The individual participant redemption rate can be stored on a participants personal chip (in a smart card, mag card, Java ring or the like) or maintained by the program's sponsor or can be maintained separately by an organization that provides individual participant redemption rates for a wide class of participants in various programs sponsored by organizations that are willing to accept enhanced customer redemption rate. In addition, the personal chip functionality can be combined with a personal digital communication device according to the present invention to provide added functionality.

Consistent with the present invention, an organization (e.g., incentive company or system operator) that is independent from traditional reward program's sponsors (e.g., airline or bank) can maintain a database or databases that contains the identity of customers and a redemption rate associated with each participant. The incentive company operates a computer-implemented system, according to the

present invention, that allows the customers to build up their redemption rates through certain participant action (or inaction). For example, participant actions resulting in the awards may be performed online or reported over the Global Information Network or Internet. The entity (e.g., incentive company) that  
5 maintains the participant redemption rates, also has a communication link with the reward program sponsors so that a participants redemption rate can be reported upon request. In this way, a wide range of program sponsors can quickly query a single source to obtain a participant's specific redemption rate as needed

Alternatively, participant redemption rates may be calculated and  
10 maintained individually by reward program sponsors. The use of individual participant redemption greatly enhances the ability to target specific action by making possible to incentivize in dimensions that it not previously been available.

The present invention also provides an incentive that can be used in conjunction with electronic commerce through instant messaging to improve the customer experience through improved customer service and satisfaction. This is  
15 achieved by creating incentives for sales agents and rewarding consumers when the merchant fails to deliver the expected level of service and satisfaction.

The system of the present invention also provides for "Instant" Redemption of rewards to improve the perceived value of the incentive program.

20 The program of the present invention can be applied to a wide variety of economic activity, but is particularly useful in the context of activity involving electronic transactions. Thus, for example, the present invention is applicable to airline frequent flyer programs, mass transit loyalty programs that use electronic payment, credit card/debit card reward and rebate incentive programs, point of  
25 purchase system, retail loyalty programs, Internet site/portal loyalty programs, programs for improving the utilization of assets ranging from utilities to electronic payment (commerce) to casino gaming.



The present invention is particularly well suited for use in conjunction with smart cards, digital cellular phones, personal digital assistants and other emerging infotech hardware.

In addition, the present invention provides a cellular position locator that can be used in conjunction with personal digital communication devices, including existing digital cellular handsets or personal digital assistants with digital communication capabilities, and takes advantage of data available from existing cellular network infrastructure. The cellular position locator can be used to promote selected merchants (which should be understood as encompassing merchants, vendors and service providers) through an electronic directory. The electronic directory is preferably accessible through the Internet so that merchants can upload information as desired and multiple phone networks (including fixed networks, if desired) can access the same databases.

Personal digital communication devices according to the present invention may be co-branded and provided with hardware and software features to promote the sponsor's business. The cellular position locator can be used for other purposes as well and can be used in conjunction with the points-based incentive programs of the present invention.

As noted above, the present invention makes it possible to create incentives for efficient use of equipment that is in great demand by rewarding frequent use of the equipment. This is particularly useful in the context of casino gaming machines in which equipment may be occupied by a player (in the sense some one is sitting in front of a machine (or table) and preventing use by another customer), but not used (in that the game is not actually in process – a bet is not being made). At peak times, there is often be a shortage of machines such that delay in use of the machines will result in loss of revenue to the casino. Thus, in accordance with another aspect of the present invention, an individual participant redemption rate can be used to reward customers that use equipment efficiently. In the case of a

slot machine, for example, a customer can be rewarded for playing the machine within a predetermined time period from the last game or penalized for taking too long to play or quit. Similarly, the system and method can be used to create additional incentives to motivate certain participant action.

5            Similarly, the system may be used to promote efficient use of utilities and allow formation of purchasing collectives.

10            The present invention provides a personal communication and electronic commerce system for use by participating users and participating merchants. The system includes a cellular communication network that includes geographically spaced base stations that communicate with, i.e., are linked to a fixed communication network. Users may have personal communication devices that can be used to allow transmission of a digital message generated on the personal communication devices by placing a call through one of the base stations and memory for storing a digital value corresponding to a monetary value. The personal communication device may also be used as a cellular position locator to determine one's geographic location and, if desired, to access information from a merchant information database containing information pertaining to a plurality of participating merchants located within the geographic territory covered by the cellular communication network. The merchant information may be stored on a database that is accessible by merchants so those merchants can add, delete or alter information contained in their respective listings. An incentive system is also provided for creating incentives for participating users to encourage desired participant actions. The incentive system comprises a computer implemented incentive program for encouraging certain participant actions. The incentive program includes a first reward program component under which participants may earn points for certain actions and a second reward program component through which the redemption rate associated with a particular participant is adjusted in

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response to certain participant action. The incentive program has a wide range of applications, including transportation, financial services and computer gaming.

More specifically, the present invention provides a personal communication and electronic commerce system for use by participating users and participating  
5 merchants. The system preferably includes: means for storing a participant ID for each of the participating users and a merchant ID for each of the participating merchants; a cellular communication network that includes a plurality of geographically spaced base stations that each have a base station identity and are each capable of communication with a mobile exchange that is in communication  
10 with a fixed communication network; a plurality of personal communication devices, each of the personal communication devices comprising: a unique digital code stored in memory that identifies the device; a display; a user interface for allowing an user to generate digital messages; a transmitter and receiver for wireless communication with the cellular communication network so as to allow a digital message generated  
15 on the personal communication devices to be transmitted by placing a call through one of the base stations and memory for storing a digital value corresponding to a monetary value; means for correlating the unique digital code stored in memory of each personal communication devices to a participant ID; means for transmitting a digital value corresponding to a monetary value to the memory of the personal  
20 communication devices; and means for creating incentives for participating users to encourage desired participant actions.

The present invention also provides a position locator for determining the geographic location of any of the personal communication devices based upon the identity of the base station to which a digital geographic location query message is  
25 transmitted and displaying information concerning the geographic location of the personal communication device that transmitted the digital geographic location query message on the display of the personal communication device that

transmitted the digital geographic location query message in response to the query transmitted from the personal communication device.

The present invention further provides a merchant information database containing information pertaining to a plurality of participating merchants located within the geographic territory covered by the cellular communication network, each of the merchants having a merchant ID; and means for determining the merchant ID of all participating merchants located within a predetermined geographic proximity of each of the base stations and wherein the system can retrieve information pertaining to specific participating merchants from the merchant information database and transmit this information to participating users; and wherein merchant information is stored on a database that is accessible by merchants so that merchants can add, delete or alter information contained in their respective listings.

The present invention also provides a system and method for creating incentives for participating users to encouraging desired participant actions comprises a computer implemented incentive program for encouraging certain participant actions, the program comprising: a plurality of participants; a participant ID associated with each participant; a redemption rate associated with each participant ID; a first reward program under which participants may earn points for certain actions; a second reward program through which the redemption rate associated with a particular participant is adjusted in response to certain participant action.

The position locator of the present invention preferably comprises a cellular position locator system for use in connection with a cellular communication network that includes a plurality of geographically spaced base stations that each have a base station identity and are each capable of communication with a mobile exchange that is in communication with a fixed communication network. The cellular position location system comprises a plurality of personal communication

devices. The personal communication devices each include: a unique digital code stored in memory that identifies the device; a display; a user interface for allowing an user to generate a digital geographic location query message; a transmitter and receiver for wireless communication with the cellular communication network so as to allow a digital geographic location query message generated on the personal communication devices to be transmitted by placing a call through one of the base stations. The system further includes means for determining the geographic location of any of the personal communication devices based upon the identity of the base station to which a digital geographic location query message is transmitted and displaying information concerning the geographic location of the personal communication device that transmitted the digital geographic location query message on the display of the personal communication device that transmitted the digital geographic location query message in response to the query transmitted from the personal communication device.

The user interface of the personal communication devices preferably provides the user with a sequence of generic menu choices that become progressively more specific so as to narrow the user's particular query and wherein the menu selections generate a digital geographic location query message that is stored in memory before transmission to a base station.

The personal communication devices may include a range selector through which the user can adjust the geographic range to be queried. The devices preferably include an easily understood model (representation) of the range covered by queries to assist the reader in understanding and selecting an appropriate range.

The digital geographic location query message transmitted from the personal communication device contains the following components: a bit string identifying the personal communication device transmitting the message; a bit string identifying the message as a digital geographic location query message and a bit string indicating the specific nature of the request; and wherein the digital

geographic location query message transmitted from the personal communication is received by a base station and passed along to a mobile exchange along with a further bit string that identifies the base station.

The cellular position location system further comprises a merchant information database containing information pertaining to a plurality of participating merchants located within the geographic territory covered by the cellular communication network, each of the merchants having a merchant ID; and means for determining the merchant ID of all participating merchants located within a predetermined geographic proximity of each of the base stations and wherein the system can retrieve information pertaining to specific participating merchants from the merchant information database and transmit this information to participating users. Each base station preferably has a base station ID; and the participating merchants are classified into a plurality of classes and the system can search for merchants by class wherein a base station receiving a digital geographic location query message, passes the digital geographic location query message along with the base station ID to a computer that identifies merchants, if any, that satisfy the query and are located near personal communication device that transmitted the digital geographic location query message and a computer for retrieving information from the merchant information database and transmitting information retrieved from the merchant database to the personal communication device that transmitted the personal communication device for display on the display of the personal communication device that transmitted the personal communication device.

In accordance with the present invention, merchant information is preferably stored on a database that is accessible by merchants (through the internet, for example) so that merchants can add, delete or alter information contained in their respective listings.

The personal digital communication devices may be a digital phone of the type that includes the following features: a scroll button to allow the user to scroll

through menus and sub-menus; a button that dials a number displayed on the display; a power key to turn the device on or off; a plurality of softkeys whose current function is displayed on the display proximate the key; an end button, which is pushed to end a communication session; a 12 key array of alphanumeric keys ranging from 1-0 and including \* and #. In addition, the personal digital communication devices may be co-branded and/or have a sponsor merchant associated therewith. The device could also include a button for transmitting a predetermined digital geographic location query message concerning sponsor merchant locations. The digital communication device could also include a smart card with a personal chip. The smart card is preferably detachable from the remainder of the device so that can be used separately from the remainder of the device and so that a single device may be used with multiple smart cards and vice versa.

The present invention also provides various unique applications of an incentive program for encouraging certain participant actions. The program comprises a plurality of participants ;a participant ID associated with each participant; a redemption rate associated with each participant ID (at least some of the participant redemption rates are non-whole number values); a first reward program under which participants may earn points for certain actions and a second reward program through which the redemption rate associated with a particular participant is adjusted in response to certain participant action. The program may be implemented with a system that includes: a participant action reporting unit, a participant ID Input unit; a data storage and memory unit; a redemption unit; an incentive adjustment unit and a computation unit. A base redemption rate is preferably associated with each participant and the base redemption rate is not the same for all participants and at least some of the base redemption rates are non-whole number values.

5 The incentive program may be applied to a casino game such that the plurality of participants are the players; the players' participant ID is determined by the location of the machine or associated with each participant; the casino game is a first reward program under which participants may earn points that may be redeemed for cash or prizes and the second reward program is a variable redemption rate program through which points may be redeemed for currency based upon the redemption rate in effect at the time of redemption and wherein the redemption rate associated with a particular participant is adjusted in response to certain participant action. To encourage the players to play frequently and improve utilization of the underlying casino game, the system includes a timer that determines whether a predetermined time period has elapsed between consecutive plays of the casino game and wherein: if the player has a positive credit winnings balance, the exchange rate is increased by predetermined amount every time the player plays within the predetermined time period; if the player has a negative credit winnings balance then the exchange rate is decreased by predetermined amount every time the player plays within the predetermined time period; if the player has a positive credit winnings balance, the exchange rate is decreased by predetermined amount whenever the predetermined time period interval has passed without the player playing; and if the player has a negative credit winnings balance then the exchange rate is increased by predetermined amount whenever the predetermined time period interval has passed without the player playing.

25 In addition, the variable redemption rate is used to provide an auxiliary game pursuant to which a player that has a net positive balance can place an auxiliary bet that, if won, results in increasing the redemption value of the positive balance at the risk of dramatically reducing the value of the positive balance.; and pursuant to which a player that has a negative balance can place an auxiliary bet that if won reduces the redemption value of the negative balance would be reduced at the risk of increasing the redemption value of the negative balance.



The system may further include a display screen for displaying information concerning the amount of dollars on deposit, the net results, the current redemption rate, the dollar value of the net results determined by applying the current exchange rate and the current balance and a visual display to graphically illustrate the time remaining.

The present invention will be described in greater detail in connection with the attached drawings in which

### **BRIEF DESCRIPTION OF DRAWINGS**

Fig. 1 is a high level view of the system architecture from the two component variable redemption rate incentive system of the present invention.

Fig. 1A is a high level view of the architecture of a highly distributed system according to the present invention.

Fig. 1B is a high level view of the architecture of a centralized system according to the present invention.

Fig. 2 is a flow diagram for a two-component incentive system.

Figs. 3A-B illustrate three distinct systems for converting base points into program (reward) points according to the present invention.

Fig. 4 shows charts illustrating the benefits of a utility purchasing collective according to the present invention in which consistent usage may be encouraged using the incentive system of the present invention.

Fig. 5 shows a display for use in a casino gaming device according to the present invention.

Fig. 6 shows an example of a cellular phone network architecture according to the present invention.

Fig. 7 shows a digital mobile telephone handset with LCD display.

Fig. 7A shows a menu summary for a personal digital phone according to the  
5 present invention.

Fig. 7B shows a co-branded personal communication device with promotional hardware features.

Fig. 7C shows an alternative co-branded personal communication device with a detachable smart card and a full display with Internet browser.

10 Figs. 8-8C depict cellular phone locator (CPL) menus and screens and system flows according to an embodiment of the present invention.

## DETAILED DESCRIPTION

15 While the present invention will, in some instances, be described in the context of a single system for storing participant information, it should be understood that systems are now moving toward decentralization at a rapid pace. Thus, it is not intended that the present invention should be limited to a central system for carrying out features described as part of a system. Instead, terms such as "system" and "unit" as described herein can be a series of linked physical  
20 components residing in widely spaced physical locations. Also, the terms "vendor," "merchant" and "service providers" are used both collectively and interchangeably. Unless specified to the contrary, these terms are intended to be interchangeable.

In addition, it should be noted that the system in which individual participant redemption rates are calculated and associated with specific customers  
25 could be internal to an existing reward program or could be maintained by a

separate organization (system operator) that is in communication with various sponsoring companies and participants. Indeed, the system could be embedded into a conventional reward program to give the appearance of a single reward that varies by participant and varies over time.

5           Fig. 1 shows the overall system architecture of the two-component variable rate incentive system of the present invention. As shown in Fig. 1, the system includes various functional units in communication with one another. Again, the individual functional units need not reside in a single physical location and the different functional units need not be physically distinct from one another.

10         Moreover, the communication within and between respective units can be a dedicated communication line or a data bus or could be a public or private network.

15           In Fig. 1, the system includes a participant action reporting unit that functions to monitor, verify and report participant action and relevant details. Thus, for example, in the context of an airline frequent flyer program, the participant action unit determines that a particular participant has taken a flight and reports that time and date of that flight. In the context of a credit card reward rebate program, on the other hand, the participant action reporting unit reports that a transaction has occurred and provides details concerning the merchant and the amount of the transaction. Naturally, other details could be provided  
20         concerning the specific time of the transaction, the brand of goods or services purchased and the merchant location.

25           The system further includes a participant ID input unit, which functions to identify a particular participant. In its simple form, the participant ID input unit could be a keyboard or other mechanism for inputting a participant ID code, frequent flyer number or account number. To avoid manual entry of the participant ID, a bar code ID code, a mag-card, a smart card or a Java ring encoded with a participant's ID information could be used and the participant input unit 20 would include an appropriate card or chip reader. Alternatively, a biometric identification

unit, such as a thumb scan or iris scan could be used to provide participant identification.

The system further includes a data storage and memory unit 30. The memory unit is likely to reside in various locations, but could, in some instances, be provided on a single chip. The memory unit stores data structures in a way that allows access to other components of the system. The data may be stored in any known type of data structure, including files, tables or objects. The system further includes a database management system that manages the creation, storage, access, updating, deletion and use of data stored in the memory. The database management system preferably resides in the computation unit 70. The data storage and memory unit 30 preferably uses either a relational database model or an object-oriented database model, but could employ other models or combinations thereof.

The data storage and memory unit 30 keeps track of information for each of the program participants. This information preferably includes information pertaining to base points, a participant base rate, a participant redemption rate, participant marketing data and participant action history/data. In addition, the data storage and memory unit 30 includes a base point award table and a redemption rate adjustment table that provide information as to the awards corresponding to certain participant actions.

The system further includes a redemption unit that has the ability to generate rewards by, for example, printing certificates or generating electronic awards, such as credits to a smart card, a mag-card or generating an e-ticket or e-money credit.

The system further includes an incentive adjustment unit 50 that allows an incentive company or program sponsor to adjust information stored on the base

point award table or redemption rate adjustment table or otherwise create incentives corresponding to desired or undesirable participant actions.

Finally, the system includes a computation unit 70, which is preferably in the form of a variety of distributed computers that provide computer processing capacity where needed.

Within the high-level system architecture illustrated in Fig. 1, there are numerous possible specific system architectures. The possible systems range from highly distributed systems to highly centralized systems. To illustrate the range of systems that are possible, two examples will now be described. In particular, Fig. 1A shows a highly distributed system architecture in which merchants 130 have relatively simple participant action reporting units 10 and an incentive company 170 provides the redemption unit 40, incentive adjustment unit 50 and computation unit 70. In this example, the participant's smart card provides the functions of the participant ID unit and also provides the functions of the memory unit 30. As noted previously, the term "smart card" refers to any form of personal chip that can contain a participant's information.

In the highly distributed system such as that shown in Fig. 1A, the participants carry a personal chip, which may be embedded in a smart card, that contains not only their identification information, but also a variety of other information, including, for example, a participant's accumulated base points, the participant's individual base redemption rate (BRR), the participant's individual variable redemption (VRR), the participant's accumulated reward points, and a wide variety of marketing data and participant action history data. The personal chip carried by the participant could also contain a base point award table and a participant redemption rate adjustment table, but this is not preferred, as it complicates making adjustments to these tables. Again, the personal chip could be embedded in a Java ring (a piece of jewelry worn by the user) or integrated into a personal communication device.

An advantage of the highly distributed system of the type shown in Fig. 1A is that it alleviates the need for the merchants 130 to invest in expensive hardware. In particular, the merchant would only be able to record participant actions and any relevant details thereof and report the same either to an incentive company or electronically record information on the participant's smart card for later reporting.

The system shown in Fig. 1A includes an incentive company 170 (system operator), an additional entity that handles some of the infrastructure burden to run the program, including providing a redemption unit 40, the incentive adjustment unit 50 and the computation units 70. With this architecture, the merchants 130 are able to outsource these activities to a common incentive company 170. Of course, it is not necessary that the incentive company 170 be distinct from the individual merchants and the merchants could handle the functions of the incentive company 170 internally, if desired.

Fig. 1B illustrates the architecture of a more centralized system in which in the centralized system customers or participants 200 need only be able to identify themselves at the time of taking an action. Again, the participant ID could be a simple account number, personal identification number (PIN), mag-card identification number stored on a mag-card or biometric verification or the like. The merchant or sponsor 230, either by itself or in conjunction with a outsourcer incentive company provides the participation action reporting unit 10, the memory unit 30, the redemption unit 40, incentive adjustment unit 50 and the computation unit 70. A significant aspect of this architecture is that information concerning accumulated base points, accumulated reward points, participant's base redemption rates, participant's current redemption rates and participant marketing data is kept on a central database rather than on a personal chip.

It will be appreciated by those skilled in the art that a wide variety of system architectures are available to meet the functional needs of the system of the present invention.

Fig. 2 shows a high-level flow diagram for a two-component incentive system according to the present invention.

As shown, after the system begins at step 300, the initial step is inputting a participant identification in step 310. A participant action is then inputted at step 320. At step 330, a determination is made as to whether the participant action results in base points. Typically, this would be done through reference to a base point award table in the data storage and memory unit. If NO, then the system proceeds to step 350. If the participant action does result in base points, a determination is made as to the amount of base points earned at step 340 and the amount is stored. Depending on the arithmetic sequence of redemption, base points earned may be stored alone or added to the accumulated base points.

At step 350, the system determines whether the participant action results in a change to the participant's individual variable redemption rate. If NO, then the system proceeds to 370 and ends. If, on the other and, the participant action does result in a change to the participant's variable redemption rate (VRR), the system proceeds to step 360 where a determination is made at the new variable redemption rate and the new variable redemption rate is stored. This step is preferably performed with reference to a variable redemption rate adjustment table and, if necessary, reference to a participant's base redemption rate and current redemption, which are stored in memory.

Further details and specific examples of the system according to the present will now be described in the context of the system's use in connection with various point-based award programs.

### **Conversion of Base Points to Reward Points**

An important characteristic of the variable redemption rate incentive program is that the arithmetic sequence in which reward points are calculated can also impact the conversion base points into program (reward) points. This is

because, among other things, the redemption rate can vary over time. Thus, more specifically, a different result can be obtained when base points are converted into program points (through use of the redemption rate) as soon as the participant action is reported as opposed to a situation in which base points are converted into program points periodically as opposed a situation in which base points are converted to reward points only upon request of the participant. Figs. 3A and 3B demonstrate this point by providing examples of each redemption scheme.

In the examples shown in Figs. 3A and 3B, the following notation is used:

PARTICIPANT ACTION = **PA**

BASE POINTS EARNED = **BP**

REDEMPTION RATE = **RR**

PROGRAM POINTS = **PP**

The first example shown is referred to as System 1, a continuous redemption system. In this system, base points are converted to program points as they are earned by reference to the redemption rate in effect at that time. Thus, for example, the conversion of three participant actions would proceed as follows:

$$PA_1 \Rightarrow BP_1 * RR_{@T1} = PP_1$$

$$PA_2 \Rightarrow BP_2 * RR_{@T2} = PP_2$$

$$PA_3 \Rightarrow BP_3 * RR_{@T3} = PP_3$$

Resulting in TOTAL PROGRAM POINTS =  $PP_1 + PP_2 + PP_3$

The second example is referred to as System 2, a periodic redemption system. Base points are converted to program points at the end of a predetermined period,



e.g., monthly, by reference to the variable redemption rate in effect at the end of the period. Thus, for example, the conversion of three participant actions would proceed as follows:

5                                      Total Base Points

PA<sub>1</sub> ⇒ BP<sub>1</sub>                      BP<sub>1</sub>

PA<sub>2</sub> ⇒ BP<sub>2</sub>                      BP<sub>1</sub> + BP<sub>2</sub>

10

End of Period 1 (P1)

$$(BP_1 + BP_2) * RR_{@ \text{end of P1}} = PP_{@ \text{end of P1}}$$

15

PA<sub>3</sub> ⇒ BP<sub>3</sub>                      BP<sub>3</sub>

End of Period 2 (P2)

$$\text{Resulting in } PP_{@ \text{end of P1}} + [(BP_3) * RR_{@ \text{end of P2}}] = PP_{@ \text{end of P2}}$$

20

The third example, referred to as System 3, redemption only on demand system. In this system, base points are converted to program points only upon the participant's demand/request by reference the variable redemption rate in effect at the time of demand. Thus, the conversion would proceed as follows:

25

Total Base Points

PA<sub>1</sub> ⇒ BP<sub>1</sub>                      BP<sub>1</sub>

$$PA_2 \Rightarrow BP_2 \quad BP_1 + BP_2$$

End of Period 1

5

$$PA_3 \Rightarrow BP_3 \quad BP_1 + BP_2 + BP_3$$

End of Period 2

10

$$BP_1 + BP_2 + BP_3$$

Redemption Request  
made at end of Period 2 +  $\Delta$

15

$$\text{PROGRAM POINTS} = (BP_1 + BP_2 + BP_3) \times RR_{\text{at time of redemption}}$$

From the foregoing, it can be readily appreciated that selection among these or other sequences of conversion can materially influence the resulting program points and thus offers another opportunity to create incentives.

20

One of the significant advantages of using individually calculated redemption rates is ability to taken into account timing of actions by individual program participants, whereas existing programs can, at most, accommodate differences for timing among certain classes of participants.

### **Instant Messaging/Electronic Transactions**

25

There are various synergies available when the system and method of the present invention are used in connection with instant messaging technology. As used herein, instant messaging technology refers to the range of technologies,

including ICQ, that allow one to determine if and when someone else is online and send a message directly to that other user. Typically, the instant message bypasses normal Internet protocols so that messages are received much more quickly than e-mail, for example. Instant messaging is currently available from AOL, MSN, Yahoo and Prodigy. These systems also provide notification of when selected others are online. AOL refers to the notification feature as a "Buddy List."

It is predictable that instant messaging will be adapted for online commerce by, for example, enabling conversations between online customers and sales people. For example, in an online or virtual retail experience, a customer/participant would "enter" a store by visiting a merchant's web site. Information pertaining to the merchant's goods and/or services could be browsed at the customer's leisure. However, with the introduction of instant messaging, it will be possible to contact a salesperson by, for example, clicking on a "Request Assistance" button displayed on the website. The website could also display a list of experts available for discussion. Thus, there might be sales agents with expertise in current fashion, the sizing of certain vendors (e.g., "ARMANI tends to run a little small), or the suitability of products for customers with special needs.

Using "Buddy List" technology, customers could be advised as to the availability of sales agents with specific expertise. For example, upon clicking "Request Assistance," the customer/participant could be shown a list of sales agents available and contact them by selecting one of the available choices.

The sales agents could be identified by name or pseudonym to at least create a perception of personal service and build loyalty. Alternatively, to improve efficiency, the sales agents could be identified by expertise only, which is not unlike most customers' normal retail experience.

With investment in online retailing, it will become increasingly important to ensure prompt and courteous customer service. As these virtual interactions

become more real (in terms of time and perception), customer service will become a differentiating characteristic for online merchants. The system and method of the present invention could be used to implement both customer incentive/reward programs and salesperson incentive programs that would lead to greater customer satisfaction and loyalty.

One example of a range of incentive programs that take advantage of the synergies between the present invention and instant messaging are time-based customer and sales person incentives. With instant messaging it is possible for an online merchant to be notified as soon as a customer "enters" the vendor's virtual store, i.e., the vendor receives an instant message from the customer. With this information it is possible to guarantee that a customer will be greeted (i.e., receive a responsive message from a sales agent) within a set period of time. The sales agent could be human or an intelligent computer agent that is capable of interacting with the customer in a satisfactory way. Incentives could be used to back up the guarantee by rewarding/compensating the customer if the guarantee is not met. Likewise, sales agent compliance could be encouraged through an incentive program that encourages the sales agents to respond to customers promptly.

In one example, using a variable redemption rate (VRR) incentive program according to the present invention, participants could be rewarded by base points, an increase in redemption rate and/or direct reward (program) points if the vendor fails to provide the guaranteed level of customer service. If the vendor promised that a sales agent would reply to any inquiry within 30 seconds, for example, the customer participant could be awarded a point (or an incremental redemption rate increase) for every second beyond 30 before the sales agent responds. The system starts a timer, which is preferably displayed along with a welcome message immediately upon receiving the incoming inquiry message. If more than 30 seconds elapse, i.e., the timer reaches 0:00:00, the system displays a point or redemption rate counter that displays the accumulation of points that the customer will receive

in compensation for the inordinate delay. Should the customer/participant log off the site, however, the accumulated points will not be credited.

In a system such as that just described, the vendor or merchant sponsoring the program will have a great incentive to respond to inquiries quickly. To transfer this incentive to sales agents, however, some form of incentive program might be required. For example, sales agents could be awarded points for responding to incoming customers within a predetermined time period after disengaging from that sales agent's last customer interaction. An incoming message routing system can be used to send the "oldest" incoming message to the first available sales agent.

Preferably the initial routing can be done within a few seconds after receiving the incoming message, but the urgency of the sales agent responding to the incoming message will obviously depend on the time remaining in the guaranteed response time period, when the message is received by the sales agent. Thus, if the guaranteed response time is 30 seconds and the message is forwarded to a sales agent in 5 seconds, the sales agent has a comfortable period of 25 seconds to transmit a responsive message. In contrast, if system traffic or some other delay causes the routing system to take 25 seconds to forward the incoming message to the sales agent, a responsive message must be transmitted in a mere 5 seconds. Thus, there is a need to provide the sales agent an extra incentive for responding quickly to the latter incoming message. Moreover, the delay in forwarding the latter message likely reflects increased demands on the system and thus an even greater need for sales agent efficiency to alleviate the demands.

A points-based incentive program can be used to create appropriate sales agent incentives. For example, incoming messages could be given a point value based on the urgency of response required. Thus, a sales agent responding to a message within 5 seconds would earn more points if the message responded to was urgent, as in the latter example. If, as in the foregoing example, the guaranteed response time is 30 seconds, the point value of responding to the incoming message

could be inversely proportional to the time remaining when the message is forwarded to the sales agent.

Alternatively, each response could be given a set point value, e.g., 30 points, which point value would decrease in increments as the time available for response expired. Thus, at the time a message is sent to a sales agent it is worth 30 points, but the point value is reduced in proportion to the time remaining until the point value reaches some low (or even zero) value when time has expired. Thus, if a message is forwarded with only 5 seconds remaining, its 30 point value for immediate response will be reduced by 6 points each second if the base value is selected as 0 points or by 5 points each second if the base value is selected as 5 points. On the other hand, if a message is forwarded with 25 seconds remaining, the 30 point value of immediate response will be reduced by 1.2 points each second if the base point value is selected as zero or 1 point each second if the base value is selected as 5 points.

The just described arrangement provides the desired effect of conveying a sense of urgency to messages with little time remaining for response and also produces highly desirable network effects in a system with a plurality of sales agents. In particular, to the extent that delays in forwarding messages to sales agents are caused by demands on the system, such delays can be reduced through the collective effort of all the sales agents handling incoming messages more efficiently. This network effect will become evident to the sales agents as they begin to receive incoming messages with more time available for response, which is desirable from a sales agent's perspective.

To ensure that sales agents are courteous as well as efficient, the award of points earned could be conditioned on a customer's indication that they were satisfied with the message exchange. Furthermore, and consistent with the variable redemption rate of the present invention, the rate at which time-based

points are converted to reward points could depend on the customer's evaluation of the sales agent as follows:

	<u>Quality of Service</u>	<u>Redemption Rate</u>
5	Excellent	2:1
	Good	1:1
	Fair	0.5:1
	Poor	0 points

10 This system would also provide valuable feedback for evaluating sales agents. Customers could be encouraged to respond to the customer service inquiry through an offer of base points, increases in redemption rate and/or reward points. From the foregoing, it should be evident that ability to track, monitor, time and measure customer/sales agent interaction that is inherent in electronic/online transactions can be used to optimize efficiency and customer service. The present invention is similarly applicable to any environment where it is possible to track and reward (or penalize) participant action in a way that will influence participant action.

15 One of the principle aspects of the present invention is that the awards are constantly in flux and not cumulative as most existing reward programs are. This introduces a sense of urgency and involves incentives based on the timing dimension. For this reason, the system works ideally when matched with an existing cumulative reward program so that the benefits of both incentives are achieved.

25 The present invention is widely applicable to any incentive program in which a participant earns "points" or some form of award that, such as cash rebate that can be modeled as "points." The critical aspect of the present invention is the

recognition that, regardless of what the “points” represent, points are merely a model of something of value and have no inherent value of their own. As such, the true “value” to the participant occurs when the intangible “points” are converted into some tangible reward, which may be a ticket for a free flight or a cash reward.

- 5 The present invention takes advantage of this insight by allowing an additional incentive creation that occurs right at the point where value to the participant is created, namely redemption.

In addition, to its applicability to known incentive programs, the present invention can be used to create incentives that have not previously been possible.

### Instant Redemption

10 In accordance with another important aspect of the present invention, it is possible to offer participants instant point redemption for goods and services from participating vendors and service providers. In other words, accumulated reward (program) points could be redeemed at the point of sale. This feature flows  
15 naturally from the fact that the architecture of the system of the present invention presupposes a high level of interconnection and communication between the vendors and service providers and the databases on which the participant specific information is stored. At minimum, it is necessary for vendors to be able to report participant actions in association with a participant ID. It is preferable that the  
20 time and specific nature of the participant action be reported as well.

In a highly distributed architecture, much of this communication occurs between a participant’s smart card, a vendor or service provider’s system, or alternatively, between an incentive company’s database and a vendor’s system.

25 The vendors or service providers would be able to query the participant database, to ascertain a participant-specific redemption rate and/or number of points, either base points or already-converted reward points associated with that particular participant ID. With this or a similar architecture, it would be possible



to quickly ascertain the points available to a participant at the point of sale and thus enable instant redemption.

Alternatively, participants could redeem points at smart card terminals located at a vendor location, a sponsor location, a remote location (such as an automated teller machine) or even at the participant's home. The smart card terminal would preferably be able to verify a participant's ID (through biometric identification or the use of a personal identification code). The smart card terminal should include some means, such as a touch screen for allowing the participant to select an award. The smart card terminal also can retrieve the participant's available base points, redemption rate and/or reward points and retrieve or determine the amount of reward points required for the desired award. If the participant has enough reward points available, the smart card terminal can issue the requested reward. The reward could be issued in paper form by printing a coupon or ticket. However, the reward is preferably issued in electronic form. Thus, if that award is an airplane ticket, the ticket could be stored on the participant's smart card as an electronic ticket that would be accepted by the airline. If the award is a cash rebate, the cash value could be downloaded onto the participant's smart card. Other awards could, for example, be stored as electronic certificates that vendor's or merchants would honor without having to have the infrastructure of a smart card terminal.

As will be understood from the following examples, it is possible to create powerful incentives through the use of the system and method of the present invention.

#### **Airline Frequent Flyer Reward Program**

Considering first, a simple airline frequent flyer award program in which participants can earn "miles" for flying on the airline, one of its partner airlines or

patronizing another partner company, which might be a hotel or a rental car company, phone service or the like.

With the present invention, the points that are earned in a conventional fashion are treated as base points (BP) and converted into award points by multiplying the base points by the variable redemption rate (RR). Again, the frequency of converting base points into award points can be varied to alter such as is explained in connection with Figs. 3A and 3B.

In addition, through the use of the system and method of the present invention, it is possible to incentivize certain types of participant action. For example, an airline could choose to increase the redemption rate for a customer that flies on that airline at least once every week. In contrast, the airline might choose to reduce the redemption rate for customers that are only occasional travelers. With the system of the present invention, it is possible to make such adjustments with great precision. Thus for example, it is possible to slightly increment a participant's redemption rate each consecutive week that they fly the airline. In contrast, if even a single week is missed, it is possible to dramatically reduce the redemption rate or even bring the redemption rate back to the base rate. In this way, very powerful incentive is created to maintain loyalty and the incentive, namely a greater redemption rate, is only applied to the most loyal customers. The effect of such a program is demonstrated by the following example (the effects demonstrated by this example are obviously not limited to frequent flyer programs):

#### Sample 1: Frequent Flyer Promotion

Program: Increment RR (0.05) for each consecutive week flown, but reset RR halfway to base if participants misses one week and to zero if participant misses two consecutive weeks

Customer 1: Flies Weekly

Customers 2 & 3: Miss some weeks

	Customer 1 : RR		Customer 2 : RR		Customer 3 : RR	
Week	# flights	rate	# flights	rate	# flights	rate
1	1	1.05	2	1.05	0	1.00
2	1	1.10	3	1.10	0	1.00
3	1	1.15	0	1.05	4	1.05
4	1	1.20	2	1.10	0	1.025
5	1	1.25	2	1.15	0	1.0
6	1	1.30	0	1.75	0	1.0
7	1	1.35	0	0	0	1.0
8	1	1.40	3	1.05	4	1.05
9	1	1.45	3	1.10	4	1.10
10	1	1.50	2	1.15	4	1.15
11	1	1.55	0	1.075	4	1.20
12	1	1.60	3	1.125	0	1.10
13	1	1.65	0	1.0625	0	1.00
14	1	1.70	3	1.1125	2	1.05
15	1	1.75	2	1.1625	0	1.00
16	1	1.80	2	1.2125	0	1.00
17	1	1.85	0	1.10625	0	1.00
18	1	1.90	2	1.15625	2	1.05
19	1	1.95	2	1.20625	0	1.025
20	1	2.0	2	1.25625	0	1.00

Although the foregoing example is provided in the context of a frequent flyer

5 program, the same results can be obtained in any points-based program.

Of course, the system allows for adjustment of the incentive so as to accommodate a particular need. The system could also be used to reward, through increased redemption rates, participants that use electronic ticketing.

The points-based system of the present invention could also be used to compensate participants, through an increase in redemption rate, for inadequate service; delays or cancellation of flights. Similarly, increases in redemption rate could be used to reward participants that agree to relinquish their seat on an overbooked flight.

### **Subway Frequent Traveler/Customer Loyalty**

Recently, mass transit systems have adopted smart cards, debit cards and other forms of electronic payment. The use of electronic payment makes it possible to create unique incentives for participants. For example, it is widely recognized that encouraging consistent use of mass transit can help alleviate traffic congestion.

With the system of the present invention, it is possible to reward a participant that consistently uses mass transit through rewards, rebates, or even reduced rates for transportation. In the preferred embodiment, participants are given smart cards that can, among other things, store information concerning the date of the participant's last use of the transit system and a participant-specific redemption rate. The redemption rate could be applied to reward (program) points or could be used to determine the rate at which the participant's money account is debited for use of the transit system. In other words, loyal customers could be given favorable rates, which could be quickly reduced if the participant did not maintain loyalty – such as by not using the system on a weekday.

The effect of this loyalty incentive would be similar to that demonstrated by the previous frequent flyer example.

## **Credit Card/Debit Card Incentive Program**

There are numerous known credit card incentive programs, but most fall into one of two categories, both of which are "point based." The first type of incentive program awards program points based on the amount of qualifying purchases.

5 These points can then be used to buy merchandise or receive a discount on merchandise. The Diners Club program is an example of such an incentive program. The second type of incentive program is exemplified by the Discover Card. In this type of incentive program, there is a direct cash rebate based on the amount of qualifying purchases. Again, however, the amount of rebates earned can be  
10 treated as base points within the context of the present invention. As debit cards become ubiquitous, it is likely that similar programs will be introduced for debit cards

In the context of the credit (or debit) card reward program, the conventionally earned awards are treated as base points and then converted into award points by  
15 multiplying the number of base points times the redemption rate in effect at the time the conversion is made. Again, frequency of conversion can be altered to achieve different results and create varied incentives as explained in connection with Figs. 3A and 3B.

## **Point of Purchase Systems**

20 Recently, incentive programs have been expanded to encompass all forms of purchase including debit cards, smart cards or even cash payments. With such programs, participants are typically rewarded based on the amount of purchase and perhaps the type of product purchased. There are known systems for reporting such purchases to a program administrator that keeps track of the total purchases and  
25 award levels achieved through such purchases. The present invention can work as an overlay to existing credit card and point-of-purchase incentive programs in which

the awards earned are treated as base points that are multiplied by the customer's redemption rate to obtain a reward playing level.

If a credit card or point-of-purchase reward program ordinarily allowed all participants to obtain 1% cash rebate of all purchases through participating merchants, the present invention could be used to enhance systems so as to allow individually calculated redemption rates greater than or less than 1:1 to provide the option of further incentives. For example, to drive customer loyalty, so long as the participant visits a store within a certain period (e.g., once every seven days), the participant's redemption rate could be increased incrementally. There would presumably be some maximum redemption rate. Likewise, if the participant fails to visit the store within the specified period, the participant's redemption rate would be reduced. The reduction could be an incremental reduction, but to enhance the loyalty incentive, the redemption rate is preferably reduced by some percentage (e.g., 50%) of the difference between the participant's current redemption rate. A second consecutive failure to visit the store results in a return to the participant's base redemption rate. Again, participants could have different base redemption rates or all participants could have the same redemption rate. The effect of such a program is similar to that previously demonstrated in connection with frequent flyer promotions.

The system includes computer memory means for storing a participant identifier (such as a social security number), a participant redemption rate, means for monitoring participant actions including the time, date and amount of such transactions, means for adjusting individual redemption rates based upon actions monitored and means for transmitting the redemption rate to a program administrator.

## Internet Site/Portal Loyalty

The present invention is also applicable to reward loyalty to a particular Internet site or portal. In particular, it is now accepted that attracting participants to one's Internet site can be used to generate revenues. Recognizing this, there have been some proposals for rewarding participants that visit certain Internet sites or review ads placed by site sponsors. The system of the present invention can be used to enhance such rewards and or provide entirely separate incentives. By applying the system and method of the present invention to an incentive program, it is possible to reward a participant for visiting an Internet site at least once in every three-day period, for example. The reward would be a specified increment in that participant's redemption rate. In contrast, if the participant failed to visit the internet site within a three-day period the participant's redemption rate could be adjusted downward incrementally, or to some base level or by some percentage of the accumulated increases in redemption rates (i.e., a percentage of the difference [ $\Delta$ ] between the base redemption rate [BRR] and the variable redemption rate [VRR]) as follows:

$$VRR_{\text{NEW}} = BRR + (VRR_{\text{OLD}} - BRR) X$$

Where X is between 1.0 and 0.

If desired, this aspect of the invention could take advantage of instant messaging and ICQ technology to ascertain when participants are online. In this way, the system could receive a message whenever a participant goes online. The system could then be designed to penalize the participant only if they have been online and failed to come to the designated web site. Thus, a participant that was out of contact with the Internet for an extended period of time would not be penalized. Upon notification that a participant is online, the system could send a reminder message such as "Don't forget to visit (sponsor) site" and include a hypertext link to the site.

## Utilization of Assets

Because of the ability to the present invention to affect timing of participant action (by rewarding or penalizing participants), the system and method of the present invention are particularly useful for increasing the percentage of utilization of assets. Consider, for example, the operation of an airplane. Every seat in an airplane that is not sold represents lost revenue to the airline. The same applies to any common carrier and in many other capital-intensive fields. Through adjustment of the rewards through variable redemption rates, it is possible to provide powerful incentives to individual participants to take advantage of an under utilized asset. Thus, for example with an airplane, a participant's redemption rate could be adjusted not only depending on loyalty with regard to frequency of usage of the airline, but also rewarding passengers whose use of the assets is predictable so that the airline can optimize equipment utilization.

One of the foremost examples of an industry that has a need to optimize utilization of assets is the utility industry. The system and method of the present invention can be used to incentivize customers to maintain consistent utility usage throughout the day to allow utilities or utility purchasing cooperatives to manage loads.

In the case of an electrical power company, for example, the need to construct enormously expensive power plants is determined, to a large extent, by peak demand. Although load sharing among utilities can help alleviate spikes in demand, there is still a need for incentives to encourage customers to reduce usage at times of peak demand.

In accordance with yet another aspect of the system and method of the present invention, utility customers could participate in a variable redemption rate award program to encourage favorable usage patterns. The participants could belong to a points-based award or rebate program of the types mentioned above and



agree to subject their variable redemption rate to adjustment based on utility usage. Alternatively, the rate at which a utility customer pays for the utility (e.g., electricity) could be continuously adjustable depending on usage patterns. In this example, the customer gets a slightly better rate every day that its usage stays  
5 below a certain peak. But if the customer exceeds the prescribed peak on any day, its redemption rate will be sharply reduced and/or its rate paid for the utility will be increased.

In accordance with a further embodiment of the present invention, the “participants” in such a program need not be individual customers, but could be  
10 “neighborhood” utility purchasing collectives that could collectively agree to maintain usage below a certain level. The ability to offset occasional spikes in one customer’s usage with reduction in a neighbor’s usage would allow the collective to guarantee a lower peak usage than the sum of individual usages. The  
15 aforementioned incentive program could then be used within the utility collective or between utility suppliers and utility collectives to create incentives to maintain guarantees of maximum peak usage. The combined use of purchasing collectives and incentives will allow utilities to predict demand. This aspect of the present invention is particularly useful in a deregulated utility purchasing environment where a utility purchasing collective could produce its own electricity to handle  
20 peak demand if the incentive to limit its demand from the public utility was great enough.

By way of a very simple example, Fig. 4 illustrates the advantages that can be obtained by forming a utility purchasing collective among three users with different usage patterns. In particular, Fig. 4 graphically illustrates the utility  
25 usage pattern of three users that have different usage profiles, i.e., User 1, User 2 and User 3. In each instance, the graph shows the peak number of units of utility used during each hour for a 24-hour period. The graph could be a snapshot of a

single day or a profile determined by monitoring the usage over an extended period or each of the user's over an extended period of time.

The usage patterns shown are dramatically different. The usage pattern of User 1, for example, reflects moderate use during the evening hours (the beginning and end of the chart), but relatively high usage throughout the day, with peak usage occurring in the early evening. The usage pattern for User 2, on the other hand, reflects moderate use during the evening hours and peak usage during the middle of the day, followed by reduced usage in the early evening hours. The usage chart for User 3, on the other hand, reflects very high usage in the evening hours and consistently moderate use throughout the day. Variation in usage pattern of this type can be found with users having different work schedules, differences in the number of people at home during the day, and the like.

In accordance with the present invention, it is possible to provide a system for determining usage patterns for a plurality of users, such as that shown, and then matching users with dramatically different profiles, as shown in Fig. 4, to form a collective that has a lower combined peak usage.

The savings effect that can be achieved through the use of a utility purchasing collective is dramatically illustrated by the final chart in Fig. 4, showing the combined usage of Users 1, 2 and 3. As shown therein, the combined usage of the three users peaks at 26 units or an average per user of 8.67 units. In contrast, User 1's peak usage is 15 units, User 2's peak usage is 11 units and User 3's peak usage is 13 units, such that the combined peak usage of the three users taken separately is 39 units or 50% greater than the peak usage when the usage is combined.

Recognizing that peak usage is the critical determining factor in whether a utility must invest in building new capital-intensive plants, it will be understood that there are tremendous opportunities for savings for utilities if they can group

users into collectives to reduce peak usage. There are two significant challenges to achieving these efficiencies, however.

First, it is necessary to form collectives using user profiles that are quite different. This can be done using a system that generates user profiles and then randomly combines various combinations of user profiles to determine which combinations result in the lowest peak values. It should be appreciated, however, that it is likely that greater efficiencies are achieved using collectives of more than three users, as shown in Fig. 4, but that, at some point, adding additional users results in less total efficiency. Thus, the optimization program must take into account not only efficiency of any collective, but the ability to form other collectives throughout the user base.

It is also critically important to maintain consistent user patterns. Of course, there will be unexpected events, but through the use of the incentive system of the present invention, it is possible to dampen the effect of unexpected changes in usage. Also, collectives with enough users could arrange the construction of small-scale power generating facilities or purchasing through other utilities to satisfy peak usage demands.

Thus, it can be seen that the incentive system of the present invention is also useful for maintaining consistency of user usage, which is a particularly applicable field, such as the utility field, where peak usage is of paramount concern.

### **Use of Electronic Payment**

The present invention can also be used to increase the variable redemption rate (VRR) for customers that consistently use electronic payment so the manual processing is not required. As forms of electronic payment become ubiquitous, it is becoming increasingly expensive (in a relative sense) for banks and merchants to handle physical currency (coins, paper money and checks). The present invention could be used to encourage participants to use electronic payment and automated

(non-teller) banking systems. For example, a participant's redemption rate could be increased incrementally for every consecutive period of time (e.g., day, week and month) that they did not use a bank teller or use cash or a check to pay for a transaction. In addition, a dedicated co-sponsored personal communication device  
5 could be used to direct participants to merchant locations

### Casino Gaming

A particularly useful application of the system and method of the present invention to increase the utilization occurs in the casino gaming field. In many casinos, it is the case that certain assets such as slot machines or gaming tables are  
10 used to near capacity at certain times of day. Consider, for example, slot machines. A casino having 1000 slot machines in operation may have a person occupying each of the 1000 slot machines. However, the users are not necessarily using the machines to their maximum capacity. There may be significant delays between  
15 each time the user plays a particular machine. The delays during the time in which the consumer is not using the machine represents lack of utilization of the machine. The present invention can be used to create incentives for the user to use the machine in a way that maximizes profits for that casino.

In a simple example, a user redemption rate for credits earned on the machine can be incremented when the customer/participant plays within a set  
20 period of time from the last game, e.g., 30 seconds, but decreased or even reduced back to a base rate or some percentage thereof if the user fails to play within the specified time.

A more sophisticated version takes advantage of the possibility of introducing an element of chance whereby, an entirely new auxiliary game can be introduced  
25 based upon variations in their redemption rate so that the user that has a net positive balance can be given the opportunity to place an auxiliary bet that would result in substantially increasing the redemption value of the positive balance at

the risk of dramatically reducing the value of the positive balance. Conversely, if a user has a negative balance, the user could be given a chance to play an auxiliary game in which the redemption value of the negative balance would be reduced at the risk of increasing the redemption value of the negative balance.

5           The present invention thus provides to a multi-dimensional gaming system that allows participants winnings to vary in up to three dimensions: time; quickness of play and skill. The system is adaptable to any gaming system involving bets or player winnings. In particular, the base game is played for tokens that represent a monetary amount. In accordance with the present invention, however, the  
10       exchange rate of the tokens or credits, i.e., points, can be varied in a number of ways.

          The exchange rate could, for example, be varied as a function of the frequency of play. For example, the exchange rate may be constantly randomly varied, the exchange rate may be progressively increased.

15           At the same time, the exchange rate could be varied as a function of the frequency of play. For example, the exchange rate could be decreased or increased (to penalize the player) by a predetermined amount or percentage if a player waits more than a predetermined amount of time between plays or the exchange rate may be progressively changed during periods of inactivity. To encourage frequent play,  
20       the time-based change would ordinarily be made in a way to penalize the player for inactivity.

          The variation of the exchange rate could also function as an auxiliary game. Thus, for example, a player with small winnings or a large loss of credits could, by placing an additional bet, take a chance on maximizing the monetary value of the  
25       winnings or minimizing the monetary value of loss by changing the exchange rate.

## Credits

The underlying game may be any game played for credits, tokens chips etc.

5           There is an initial exchange rate, e.g., \$1 = 1 credit. The player establishes an account in a certain amount of credits, e.g., the player pays \$1000 to establish an account value of \$1000 (which initially is equal to 1000 credits, but the value in credits will vary as the game is played). At all times, the system maintains two balances 1) the player's account value which serves as collateral to ensure that the  
10   player can cover any losses and may only be changed by depositing additional money or getting additional credit through the house and 2) the credits won/lost balance. The modified exchange rate will only be applied to the credit won/lost balance but the system will never allow the player to make a bet that would result in a negative account balance. The range of possible exchange rates may be altered  
15   to allow a player to continue playing when the value of the players current losings approaches the account value.

## Frequency of Play

20           If the player is ahead (has a positive credit winnings balance), then the exchange rate is preferably increased by predetermined amount (either a fixed amount or fixed percentage) every time the player plays (such a by placing a bet). This encourages the player to play frequently and improves utilization of the underlying gaming system.

25           If the player is behind (has a negative credit winnings balance), then the exchange rate is preferably decreased by predetermined amount (either a fixed amount or fixed percentage) every time the player plays (such a by placing a bet).

This encourages the player to play frequently and improves utilization of the underlying gaming system.

### **Time**

If the player is ahead (has a positive credit winnings balance), then the exchange rate is preferably decreased by predetermined amount (either a fixed amount or fixed percentage) whenever a predetermined time interval has passed without the player playing. This encourages the player to play frequently and improves utilization of the underlying gaming system.

If the player is behind (has a negative credit winnings balance), then the exchange rate is preferably increased by predetermined amount (either a fixed amount or fixed percentage) whenever a predetermined time interval has passed without the player playing. This encourages the player to play frequently and improves utilization of the underlying gaming system.

### **Auxiliary Game**

Regardless of whether the player is ahead (has a positive credit winnings balance) or the player is behind (has a negative credit winnings balance), then the exchange rate is may gamble but system makes sure he can cover loss.

Rate could vary constantly (RANDOMLY) during game as well.

### **Cashing Out**

The player may cash out at any time, but must start over.

## CASINO GAMING

### Example 1: Player always plays within specified period

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5

Initial Condition: Deposit \$1000, RR = 1.0 Points = 1000

	Results	Dollar Value	RR	\$ Value of Net	Net Results (in Points)
10	Result 1: Win 10	1010.50	1.0	10.50	+10
	Result 2: Win 10	1022.00	1.10	+22.00	+20
	Result 3: Lose 10	1011.50	1.15	+11.50	+10
	Result 4: Lose 20	+989.00	1.10	-11.00	-10
	Result 5: Lose 40	-947.50	1.05	-52.50	-50
	Result 6: Win 80	1033.00	1.10	+33.00	+30
	Result 7: Lose 10		1.15	+23.00	+20

STOP

- 15 Play Double or Nothing? Redemption Rate will be either 1.0 or 1.3, giving the participant a 50/50 chance of winning 20 or 26 instead of 23.



## CASINO GAMING

### Example 2: Player never plays within specified period

5

Initial Condition: Deposit \$1000, RR = 1:1 Points = 1000

	Results	Dollar Value	RR	\$ Value of Net	Net Results (in Points)
10	Result 1: Win 10	1009.50	.95	9.50	+10
	Result 2: Win 10	1018.00	.90	18.00	+20
	Result 3: Lose 10	1008.50	.85	8.50	+10
	Result 4: Lose 20	991.00	.90	-9.00	-10
	Result 5: Lose 40	952.50	.95	-97.50	-50
	Result 6: Win 80	1027	.90	+27	+30
	Result 7: Lose 10	1017	.85	+17	+20

STOP

15 Play Double or Nothing \$14 Or 20 50/50 chance

## CASINO GAMING

**Example 3: Player playing the same bet (\$100) and always playing within specified time limit**

5

Initial Condition: Deposit \$1000, RR = 1:1 Points = 1000

10

Results	Dollar Value	RR	\$ Value of Net	Net Results (in Points)
Result 1: Win 100	1105	1.05	+105	+100
Result 2: Win 100	1220	1.10	+220	+200
Result 3: Lose 100	1115	1.15	+115	+100
Result 4: Lose 100	1000	1.15	0	0
Result 5: Lose 100	890	1.10	-110	-100
Result 6: Win 100	1000	1.10	0	0
Result 7: Lose 100	895	1.05	-105	-100

## CASINO GAMING

**Example 4: Player playing the same bet (\$100) and never playing within specified time limit**

5 -----

Initial Condition: Deposit \$1000, RR = 1:1 Points = 1000

10

Results	Dollar Value	RR	\$ Value of Net	Net Results (in Points)
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Result 1: Win 100	1095	0.95	+95	+100
Result 2: Win 100	1180	0.90	+180	+200
Result 3: Lose 100	1085	0.85	+85	+100
Result 4: Lose 100	1000	0.85	0	0
Result 5: Lose 100	910	0.90	-90	-100
Result 6: Win 100	1000	0.90	0	0
Result 7: Lose 100	905	0.95	-95	-100

Fig. 5 shows an example of the screen display that could be used in connection with the casino gaming system of the present invention. The display 400 is designed to be used in conjunction with the display for the underlying game. The preferably includes information concerning the amount of dollars on deposit, the results (and points), the current redemption rate (exchange rate), the dollar value of the net results determined by applying the current exchange rate and the current balance, which is the sum of the amount on deposit and the dollar value of net results.

The display shown in Fig. 5 also designed to allow participants to engage in various auxiliary games. The underlying game in this example is referred to as “beat the clock” and is based on a time-based incentive, whereby the user’s redemption rate is adjusted in a favorable direction if the user plays the game within 30 seconds from the end of the previous game.

The display shown in Fig. 5 displays the time remaining for the next bet in a digital display. In addition, a display includes a visual display to graphically illustrate the time remaining. In particular, the border of the display includes 30 blocks 420 that can be selectively illuminated or turned off. When the clock is reset to 30 seconds (at the conclusion of the previous game), all 30 blocks 420 are lit. However, as the clock counts down, one block is turned off each second so that, in the example shown with 27 seconds remaining, there are 27 illuminated blocks and 3 unilluminated blocks. Naturally, other forms of graphical visual display could be used. These graphical visual displays provide both information and excitement for the user. The particular display shown in Fig. 5 also includes a stop button 470 by which the user can stop using the machine, but cash out of the machine. The display also includes a button 430, which allows the user to select a double or nothing option after hitting the stop button.

Finally, the display shown in Fig. 5 includes a random redemption rate option that, in the example shown is not selected, but could be selected by a user to add an element of change to the redemption rate, if desired.

### **OTHER APPLICATIONS**

As mentioned before, the system and method of the present invention are applicable to incentive programs that use “points” as a basis for rewards. Such point-based programs are becoming increasingly prevalent and this trend should continue. Thus, it is expected that other applications for the present invention will continue to emerge.

For example, fitness clubs have recently begun to use point-based systems for recognizing/rewarding club members (participants) who reach certain milestones in accumulated points. In the FITLINXX™ program, for example, points are earned for certain participant actions. It is recognized, however, that frequency of exercise is critical. Using the system of the present invention, the club could reward participants for frequency and consistency of working out. Conversely, participants could be penalized for skipping a workout for waiting too long between workouts.

The present invention could also apply to diet programs, educational programs and athletic training programs provided there is some way for participants to earn points. Simply put, if there is a way for participants to earn points, applying a variable redemption rate for converting points to rewards offers the possibility of structuring enhanced incentives and increasing participant loyalty.

### **Smart Card**

Implementing the incentive system and process of the present invention in a distributed non-centralized network architecture allows opportunities to take advantage of features available through personal chips, which are most commonly imbedded in "smart cards," but could also be imbedded in Java rings, PDA's or cell phones. For example, information concerning each participant's ID and RR (redemption rate) could be physically maintained with each participant. The personal chip (smart card) would also preferably contain information concerning the participant's Base Redemption Rate if the program included different base redemption rates for different participants. The storage of this information could be achieved by providing participants with a smart card - a computer chip-based card. The smart card could be, but need not be, part of a card-based payment system. The "smart card" as used herein could be on a chip in a personal digital assistant (PDA) or could be embedded in a Java ring or part of a cellular communication device. For convenience, however, reference will be made to a plastic card of the

type used for credit and debit transactions. Known smart cards can combine, on one piece of plastic, multiple payment applications, fraud-fighting security devices, and a portable marketing data base that can be tapped at the point-of-sale to create on-the-spot promotions. Just as a smart card can contain a monetary amount, it could contain an individual redemption rate, base redemption rate and/or participant base points or reward points. The redemption rate could be incremented or decremented immediately at the time of a Participant Action resulting in such increment or decrement.

Of course, combining multiple applications on a single card is a way to enhance the value of the card with consumers. The more versatility a payment card offers, the greater the consumer's affinity to that card. Frequent travelers, for example, are likely to favor a card that combines a credit card, frequent-flier account, rent-a-car accounts, and prepaid phone card. Unlike mag-stripe cards, smart cards do not require on-line authorization. Instead, smart cards are authorized off-line by personal identification numbers. The PIN is stored in the card's chip at time of issue. Once the card is loaded into a smart card reader, the chip verifies the PIN as the cardholder enters it. The reader collects the transaction data, and downloads it daily in batch to a central computer.

The use of smart cards is also more practical than credit cards in connection with small amounts such as vending machines. The microprocessor in the card's computer chip is capable of storing a monetary value that can be decremented when used for purchases and later replenished in a read/write terminal that transfers funds from the cardholder's bank account. Through the use of smart cards, incentive programs can be extended small-dollar transactions.

There is even more potential in tying chip cards (smart cards) to marketing strategies. Points are stored in the card, as well as at a central host, but the card could also store a record of the type of merchandise a cardholder buys, right down to the last brand purchased in a particular product category. Once these data are read

and captured by the smart card terminal, they can be used by manufacturers to offer incentives at the point of sale to cardholders that purchase competing products. Manufacturers can arrange with the card sponsor to instantly present incentives at the point of sale for cardholders purchasing a competing product.

- 5 These incentives can be presented, for example, by flashing a message on a display at the terminal.

In one example, an incentive program according to the present invention, can be used in connection with a co-branded smart card. The card sponsor can take advantage of information by offering an extra incentive to customers that do not shop at competitors, for example. In the case of a smart card co-branded with an oil company, for example, the redemption rate associated with that card could be incremented upward (probably to some maximum level) every time the card was used to purchase gas from the sponsor, but reduced (either incrementally or by some percentage of the difference  $\Delta$  between the current redemption rate and the base rate) if the card were used to purchase goods from any of a predetermined group of competitors. The rate could also be incremented if the participant made a purchase within a specified time period (e.g., one week or one month) from the last purchase, but reduced if the participant failed to make a purchase within the specified period. This encourages both customer loyalty and card usage.

20 The greatest benefit smart cards can offer lies in putting multiple applications on a single card. The more closely related applications are on the card, the stronger the incentive will be for cardholders to favor the card as their payment option of choice. In addition to storing the customer ID and redemption rate, the card could feature different functions likely to appeal to frequent travelers, including a credit card, a travel card, a frequent-flier card, a prepaid telephone card, and car-rental card. Besides cultivating cardholder loyalty, multi-application cards can generate additional revenue for issuers. Card issuers can rent space on a smart card's computer chip to third parties, such as phone companies for a prepaid card

account, thereby lowering the base price of the card. Third parties benefit from the arrangement, because their logo appears on the card, along with the logos of the issuer and other third parties, which in effect makes the card a miniature billboard in the consumer's wallet.

5 It is also possible, when using smart cards, to provide specific competitively advantageous incentives. For example, it is possible to provide a loyalty incentive so that a smart card holder's redemption rate will be maintained at a higher level (higher base rate) so long as that participant does not use the card to purchase a competitive product, as explained above.

#### 10 Merchant Directory/Cellular Phone locator

In accordance with yet another aspect of the present invention, the incentive system and method of the present invention may be combined with a novel merchant directory to provide synergies for both systems.

15 A component of this aspect of the present invention is a system for locating merchants, vendors or service providers that are participating in a particular program. On a simple level, this component could be a printed directory of participating vendors that provided directions to the vendors' particular locations whether physical locations or virtual, online connections.

20 A more sophisticated system using currently-available technology would be a global positioning system for determining the participant's precise location, which could then be compared to the location of participating vendors, merchants or service providers stored in a database so that a list of the nearest available vendors could be provided to the participant. The principle limitation on such a system is the expense of global positioning systems and the computer systems that operate  
25 therewith. In conventional systems, the data pertaining to location of merchants, vendors and/or service providers must be stored and carried with the GPS system. This limits the portability of the system and also means that the data, which is



stored on compact discs, cannot be continuously updated. In addition, a separate disc is required for each geographic location. These problems could be addressed, to some extent, by retrieving merchant information from the public network or through the Internet, as discussed below.

5           In accordance with yet another important aspect of the present invention, a more economical and portable way of providing an electronic directory is provided through the use of personal digital communication devices, such as digital cellular phones, which are currently becoming ubiquitous.

10           There are two trends that make the cellular position locator of the present invention especially attractive: the decreasing physical size of "cells" and the increasing ubiquity of digital phones.

15           Most mobile telephone networks now use what is called the "cellular mobile telephone system." An example of a cellular mobile system 500 modified according to the present invention is shown in Fig. 6. This system uses a large number of low power radio transmitters and receivers, rather than a single high power transmitter. Each such low power radio transmitter and receiver is referred to as a "base station."

20           The term "cellular" refers to the fact that the geographic area in which the mobile system is intended to operate is divided up into a large number of small areas called "cells 520." There is normally one base station 510 within each cell 520, although in some cellular systems, each cell may be subdivided into a number of sectors, with each sector having its own base station. Thus, it follows that in an area that is served by cellular phone service, each base station corresponds to a particular geographic location. It is thus possible to construct a relational database,  
25           for example, correlating base stations 510 to geographic locations.

          When a mobile telephone is situated within a particular cell 520, it transmits to, or receives radio signals from, the base station 510 in that cell 520. The power of

the base station is low, so the radio signals generated by it are weak. This has the result that the radio signals are not able to be picked up by mobile telephones that are more than a short distance outside the boundaries of the cell. It follows therefore, that it is always possible to determine which base station or stations a particular cellular phone call is emanating from. Since, as noted above, the base stations correspond to particular geographic locations, the geographic location of any caller using a cellular phone transmitter, i.e., cell phone can be determined, in a general sense.

The cells 520 can be made smaller and indeed, the size of any particular cell depends upon the likely rate of use of mobile telephones within a particular area. For example, in rural areas, the cells are quite large. In metropolitan areas, on the other hand, the cells are normally very small, sometimes as small as one square kilometer or less. Should any particular cell become congested (i.e., most of the radio frequencies available for use within that cell are being utilized most of the time), the cell can be subdivided into a series of smaller cells. It follows that as cellular phone usage increases, the geographic size of the cells will decrease so that by using the present invention it will be possible to correlate a cellular phone user's geographic location with increasing precision by determining which base station a particular call is emanating from.

The way in which a cellular mobile telephone system works means that a particular radio frequency cannot be allocated permanently to a particular telephone. Instead, a particular range of radio frequencies is allocated to a particular cell. When a mobile telephone user wishes to make a call, she or he turns on the mobile telephone 530 and dials the number. The mobile telephone 530 transmits a signal to the nearest base station 510, telling the base station that the mobile telephone user wishes to make a call. The base station then identifies a radio frequency that is not in use at the time and transmits a signal to the mobile telephone to inform the mobile telephone of the frequency upon which the call is to

be made. The mobile telephone 530 then tunes into the radio frequency. The base station passes the dialed number to a telephone exchange and makes the connection or a series of connections necessary to connect the mobile telephone form which the call is made to the called telephone.

5           When the mobile telephone moves out of one cell and into the next cell during the course of a telephone conversation, a base station monitors the strength of the radio signal during the call. When the signal strength becomes low, as the caller moves out of the cell, the base station notifies the mobile exchange 505. The mobile exchange 505 then sends a signal to the base station in the adjacent cell informing  
10 it that the mobile telephone is about to enter that cell. The new base station then allocates a new frequency for the call and sends a signal to the mobile telephone that the telephone should henceforth use that new frequency for the call. The mobile telephone then tunes into the new frequency and the call continues, uninterrupted through the new base station on the new frequency. The process of  
15 transferring a telephone conversation from a particular frequency in one cell to a new frequency in an adjacent cell is called a "hand-off."

The typical mobile telephone network also have computer systems that contain databases 507 of information necessary to control the network. For example, one such database keeps a record of the location of every mobile telephone  
20 530 in the network. The mobile exchanges 505 provide information to, and retrieve information from these databases 507. The mobile exchange, together with its associated databases, not only switches calls between mobile telephones and between telephones in a fixed network 508, but also controls the hand-off process between base stations.

25           Each base station is connected by a fixed transmission medium 511, typically a fiberoptic cable, to the mobile exchange. Occasionally, the transmission medium between the base station and the mobile exchanges a very high frequency form of radio transmission known as "microwave." Because it is likely that, at any one

time, there are numerous telephone calls being made within a particular cell, the link between each base station and the mobile exchange must have sufficient capacity to enable many calls to be carried simultaneously through the process of multiplexing.

5 From the foregoing, it should be apparent that systems used to implement cellular telephone calling also generate data that has not, heretofore, been utilized to any great degree, namely, data concerning the geographic position of cellular phone users. As noted previously, this data is becoming more precise as mobile phone "cells" decrease in geographic size. This data can be generated in other ways  
10 as well, such as through GPS systems, but such systems are currently expensive and bulky.

Recent experience with global positioning systems (and GPS systems used in automobiles) demonstrates that there is customer value in correlating a user's geographic location to the location (physical location, telephone number or Internet location) of vendors, service providers, and merchants that are located in the same geographic proximity.  
15

Moreover, in recent years, cellular phone handsets have become, to a large extent, digital, and thus able to receive data packets containing information above and beyond basic information used to place telephone calls. Digital wireless has  
20 allowed phone companies to provide e-mail delivery, text messaging, increased call capacity, better security and other services, but the full potential of digital wireless has not yet been recognized. Other personal digital wireless communication devices are likely to become commonplace in the future.

Taking these considerations into account, the present invention provides a  
25 cellular position locator that takes advantage of data concerning which base station the a cellular call is emanating from, and correlates this information to data stored at a mobile exchange (or elsewhere) such as the location and contact information for

merchants, vendors and/or service providers. This information is not currently used widely, but is readily available. In accordance with the present invention, the handset 530 can be used to query the mobile exchange as to the user's present location, i.e., "Where Am I?" The system could also be used as an emergency "SOS" beacon to identify its user's location.

As an alternative, a user's position could be determined in some other way, such as GPS, and transmitted to the merchant ID database with other information

A variety of user interfaces could be used to allow the aforementioned queries. However, since most digital cellular phones already include LCD displays and buttons, the currently preferred interface is a menu-type interface in which a user can enter its queries through a combination of menu choices and data entry using buttons available on a conventional cell phone as described hereinafter in connection with Figs. 8 and 8A-8C. A personal digital assistant with digital cellular capabilities such as the Palm VII from 3Com is also an ideal piece of hardware for this system, especially since it could use Internet links to reach vendors, merchants and service providers. Any digital personal communication device is acceptable.

In accordance with a particularly important aspect of the present invention, the cellular position locator (CPL) system of the present invention can be used as a directory service. Information concerning the location of nearby vendors, merchants and service providers, and to promote participating vendors, merchants and service providers.

More specifically, one of the menu choices available to the user of the cellular position locator (CPL) would be a merchant, vendor and service provider locator. In some instances, the term "merchant" alone will be used for simplicity, it being understood that the system treats merchants, vendors and service providers alike. Thus, for example, the menu may provide choices such as restaurants, gas stations, hotels, and grocery stores. The user would then select one category of vendor,

merchant or service provider and the system would display information pertaining to the appropriate vendors within the user's geographic location, if any. The information provided could be a physical address, and Internet address and/or a telephone number, for example. The user could select a telephone number to  
5 connect to the merchant to obtain directions to the merchant. If the communication device used has Internet access capabilities, the system could return an Internet link in response to the query to allow the user to link to a web page providing a description of the vendor, merchant or service provider and directions to the physical location.

10 Of course, the information provided in response to a query need not be limited to a telephone number or address and name information, but could include any information that is capable of display on a telephone handset or personal digital assistant. Moreover, the incentive system of the present invention could be used to  
15 promote use of the cellular phone locator service by, for example, rewarding participants that use the merchants, vendors and/or service providers that participate in the cellular phone locator program. The cellular phone company could provide merchants with listings on the cellular phone locator service for a fee or provide such information free of charge and charge the user for accessing the information or both.

20 In accordance with another aspect of the present invention, the merchants subscribing to the service could be given access, through public network or intranet or the global information network (GIN), i.e., Internet, to their particular entry in the merchant information databases. Thus, the merchants could upload the information they wanted to send in response to queries as frequently as they  
25 wished. Thus, merchants could offer special promotions or incentives on a daily basis.

Using a Merchant Information Database 503 that is accessible through a public network or over the Internet offers several advantages. First, as mentioned

before, merchants can access and modify the data pertaining to them as desired. Second, multiple locator systems could use the same database. Thus, for example competing cellular systems within a single area or geographically separate cellular systems could all retrieve data from the same database. Furthermore, the a

5 Merchant Information Database 503 that is accessible through a public network or over the Internet could be accessed by participants operating from fixed locations (such as home or office) to view the dynamically changing merchant information. Thus, a person could check the daily specials at a local restaurant persons by checking the Merchant Information Database through the public network or over  
10 the Internet. Finally, the Merchant Information Database could be used by systems where geographic location is determined by systems other than the CPL system described herein. For example, location information could be provided by a GPS system or could be provided by the user through a user interface.

To permit access by a wide range of participants (i.e., participants from  
15 different cellular networks or fixed locations, the Merchant Information Database 503 must be able to recognize multiple different Merchant ID's for each merchant or all users must use a standard consistent set of Merchant ID's or a conversion system must be set up. Although any solution is possible, use of standard Merchant ID's is the currently preferred use.

20 The preferred system architecture for implementing this functionality is shown in Fig. 6. In particular, in addition the basic cellular infrastructure already described (including base stations 510, cells 520, mobile exchange 505, mobile databases 507 and the fixed network 508) includes a merchant information database 503 linked to the mobile exchange 505 (the connection may be direct or  
25 indirect).

Merchants within the cellular network (represented by dots in Fig. 6) can communicate with the merchant information database either through a direct connection 504 (which could be a phone line, a data line or wireless connection) or

through the Global Information Network (GIN) 501, i.e., Internet. Although only exemplary connections are shown, each participating merchant is preferably connected in some way.

By virtue of their respective connections to the merchant information database 503, the merchants can be allowed to upload information pertaining to their goods or services. This could be done by phone with human intervention or voice recognition or through data entry over a wide area network, intranet or direct data line. However, the currently preferred embodiment takes advantage of the Internet by establishing a web site for each merchant's information page.

Preferably, each merchant can modify the information on their page to, for example, reflect daily specials or promotions. A directory service that is linked to the mobile exchange (and could be physically resident at the mobile exchange) is allowed to access and retrieve information from any merchant's site. The data pertaining to each merchant must be stored in a format or converted by the server to a format that can be sent over the cellular network and displayed on the user's personal communication device. There could, for example, be abridged versions (e.g., name, address and phone number) for users with limited displays and more detailed versions (e.g., driving directions, daily specials, promotions and advertising) for users with greater display capabilities. To accommodate this functionality, the user's personal communication device would have to be identified and correlated to a display capability.

One of the real advantages of the system of the present invention is that it is highly portable and easy to keep up-to-date. In particular, in contrast to known GPS directories, the information concerning the vendors available, locations and advertising is accessible from a central location through a public or private network or over the Internet, rather than on a fixed data storage device such as a CD ROM. Thus, it is possible to quickly update this information to reflect new sponsors, changes in location and the like. Moreover, in conventional systems where the user



carries in the information in a fixed form, it is typically not practical to carry information for more than one metropolitan area. Thus, the user must obtain and carry with him directories for each metropolitan area that he visits. In contrast, with the present invention, the information for any particular metropolitan area is contained at the phone service provider's location, or some other physical location, in that geographic area. Thus, the user equipped with a digital cellular phone or a personal digital assistant can use the service in any geographic area where the service is available. This provides a tremendous addition in value since the use of something such as a service directory is, quite often, most necessary when one is away from one's home territory. It is important to note, however, that GPS location information could be used to retrieve information from the merchant information database. Thus, it is not required to use the cellular position locating feature described herein to retrieve information from the merchant information database.

As shown in Fig. 7, the personal digital communication device can be a conventional digital cellular phone having the following features: a SCROLL BUTTON 531 to allow the user to scroll through menus, sub-menus, and phone book; a TALK button 532 that dials the number on the display; a FIXED ANTENNA 533; a POWER KEY 534 to press and hold to turn the phone on or off; SOFTKEYS 535 whose current function is displayed above the key (for example, here their functions are "Talk" and "Link"); an END button 536, which is pushed to end a phone call; an LCD display 537 and a set of conventional 12 key array of alphanumeric keys ranging from 1-0 and including \* and #.

Fig. 7A shows a menu summary that could, for example, be stored in the memory of the digital cellular phone of Fig. 7. The summary of Fig. 7A shows both the hierarchy of screen displays and the 1-4 digit code for any particular function. Thus, a user familiar with the codes could press the keys "menu-7-3-5-6-send" to transmit a query for Thai restaurants in the area, if any. Alternatively, the user

could construct the identical request by selecting from a sequence of displayed options.

In the currently preferred embodiment, which is a digital cellular phone, the directory is added as one of the available menu choices.

5        There are numerous ways to query the phone system, but there are several competing constraints. First, it is desirable to minimize the amount of time that the user is connected to the cellular system. Secondly, to provide the highly desirable service of being able to contact a desired merchant, it is desirable that phone numbers be downloaded to the phone so that once the user disconnects from the directory service, the user can contact the merchant, vendor or service provider.

10        Taking the foregoing considerations into account, the system of the present invention is preferably designed to fully format a query on the user's personal communication device prior to contacting the directory service through the mobile exchange. The currently preferred menu driver system will now be described with reference to Figs. 8A-8C

15        As noted previously, each cell phone (or other communication device) has a unique code that identifies the personal communication device. In addition, the system is set up to provide the user with a sequence of generic menu choices that become progressively more specific so as to narrow the user's particular query.

20        Thus, after selecting the directory service, which may be referred to as the CPL (or Cellular Position locator) at step 1, the user will be presented with a broad range of categories, such as gas stations, grocery stores, restaurants, shopping malls, etc., as indicated at step 2. There could be an added menu, shown as step 1a, by which the user is given options other than the directory such as "where am I?" In the example  
25        illustrated, the user selects restaurants, and is thus presented with a still narrower selection of choices at step 3. In the example illustrated, the user has selected Italian restaurants.

In the preferred embodiment, each of the menu selections described heretofore is done before connecting to the mobile exchange. These menu choices are generic and well within the memory capacity of a standard digital cell phone handset and certainly within the memory capacity of a personal digital assistant.

5 However, when one considers the desirability of making the system function nationwide, it is clearly not practical to include all Italian restaurants in the nation within the handset's memory. Moreover, the specific merchant database must be updated periodically. Thus, this is the preferred time in which the system will access a larger-scale distributed memory. In particular, between steps 3 and 4, the  
10 handset contacts the base station and conveys the very specific request of access to the cellular position locator to locate the nearest Italian restaurant. This specific data request is passed from the base station to the mobile exchange to a central server that correlates the user's location using a relational database that determines the closest Italian restaurants by merchant ID and then retrieves the information from the merchant information database (503) and transmits data  
15 containing this information back to the user's handset. It is preferred that this information be stored in memory on the user's handset so that the user could disconnect after retrieving the information.

In the example shown, the system displays the name, address, telephone  
20 number and Internet address of one Italian restaurant located in the area. Naturally, a selection of restaurants could be provided and the user could have an opportunity to select from several choices. The user is also presented with options to call, i.e., talk to the restaurant directly or link, i.e., connect via the Internet to the restaurant's home page immediately.

25 Figs. 8A-8B also show the system flow. Those skilled in the art will appreciate that there are numerous ways to convey this data between the handset using the cellular system. However, it is preferred that the query message be in the form of a data message that contains the following components: identification of the

cell phone making the call (which could contain both a phone/user ID and information pertaining to the display capacity of the personal communication device), a code telling the mobile exchange that the message contained is a cellular position locator message and a code indicating the specific nature of the request, in this case, Italian restaurants. As shown in Fig. 8A, this data packet is created through a series of menu selection at steps 550-562. The base station 520 receiving this message passes this message along to the mobile exchange 505, along with an indication of the base station identification at step 564. The mobile exchange then checks the geographic area covered by the base station 520 at step 566 to see if there are sufficient number of vendors within that area to satisfy the user's request (step 568), and if not, then queries adjacent base stations 520 (see B at Fig. 8C) until a satisfactory number of "hits" are found. The data pertaining to the "hits" is then transmitted back to the user.

As a safeguard to prevent the system from becoming unstable and to ensure that merchants identified are sufficiently close to the user, the system limits the number of adjacent base stations that can be queried. In particular, if it is assumed that the base stations 510 are laid out in a hexagonal grid pattern as shown in Fig. 6, the number of *additional* base stations that must be queried to cover all "adjacent" base stations (that have not previously been queried may be estimated by the following equation:

$$6 * (n-1)$$

where n = number of the queries conducted. Thus, the first query is directed to merchants that are associated with a single base station 510, i.e., the base station from which the request emanates (the merchants are typically associated with the base station because it is physically located within the geographic area served by the base station 510, but merchants could be associated with base stations for other reasons, if desired). The second query (n = 2) is directed to the six base stations that surround the first base station. The third query (n = 3) is directed to the 12

base stations  $[6 \times (3 - 1)]$  that surround the six base stations queried in the second query that have not yet been queried. From this example, it can be appreciated that the number of base stations that must be queried can increase rapidly such that running the query a fourth time could take approximately 18 times the resources as query of a single base station. The demands on the system could be reduced by running simultaneous queries, but it is clear that at some point, continuing to run queries will place unjustified demands on the system. It will also be appreciated that each successive query retrieves information concerning merchants that are progressively farther from the user. Thus, depending on the geographic size of cells, the value of information retrieved will drip steadily as queries are run.

For these reasons, at step 572, a determination is made as to whether the maximum number of base stations has been searched. If so, a message such as "Sorry, there are no such participating merchants near you" is output at step 573. If the maximum number of base stations has not yet been queried, the system returns to step 566 as indicated by the letter C.

The maximum number of queries is a value that is preferably set by the system operator. However, the user could be given some input indirectly by allowing the user to specify an approximate range for the search. Thus, if, for example, each cell had a diameter of about 1 kilometer, the user could choose a range of 1 kilometer (1 query); 3 kilometers (2 queries); 5 kilometers (3 queries) and so forth according to the following formula:

$$\text{Average Cell Size (diameter in km)} * [(n * 2) - 1] = \text{Range in km}$$

where  $n$  = number of queries.

Of course, these ranges are approximate since cell size is neither uniform nor consistent. In this way, the present invention provides the possibility of an adjustable range search functionality.

The user could be prompted to specify a range when formulating the query, in which case the specified range information would be transmitted with the query. This could be done with a visual interface that graphically depicts the increase or decrease in range, e.g., through a bar graph as shown in Fig. 7C, for example.

5           Alternatively, or in addition, the system could ask the user if a wider range is acceptable after returning initial results or reporting that there are no participating merchants within the specified range.

As noted previously, the initial formatting of a directory request is performed entirely on the personal digital communication device 530, i.e., "offline." To enable this functionality, and to permit worldwide use, the menus available on the phone (an example of which is shown in Fig. 7A) are generic. However, the menus do not have to be generic. To the contrary, and in accordance with another aspect of the present invention, certain merchants may sponsor the user's personal electronic communication device. The sponsorship could take many forms, but in one embodiment, shown in Fig. 7B, a personal communication device, in this case a digital cellular phone similar to that of Fig. 7A is co-branded with a sponsor's name 538 and includes a dedicated "FIND" button 539. The FIND button 539 in this example is preferably programmed to find the nearest sponsor location(s) with a single press of a button.

20           A promotional co-branded communication device could, for example, be used by a financial institution to direct customers to their nearest branch or ATM anywhere in the country. Likewise, a national franchiser such as STARBUCKS® or McDonald's® could sponsor personal communication devices that direct customers to their nearest location.

25           A less elaborate form of sponsorship could be provided by placing a name brand sponsor on the otherwise generic menu of choices.

In addition, and consistent with the incentive program of the present invention, the personal communication device could be integrated into an incentive program whereby the user could earn points or increase a variable redemption rate by reviewing advertisements or other information delivered over the personal communication device. The advertisements could be sent in response to the user pressing a dedicated button such as the "FIND" button 539. The points earned could be redeemed for free airtime the amount of which could depend on a variable redemption rate.

Fig 7C shows an alternative co-branded personal communication device 530a that includes a smart card and fully display with Internet browser. Like the previously described phones, this communication device includes a unique digital code stored in memory that identifies the device; a display 537 (in this case a full color screen); a user interface (including buttons and a digital pen 536) for allowing an user to generate digital messages; a transmitter and receiver for wireless communication with the cellular communication network so as to allow a digital message generated on the personal communication device 530a.

The device 530a further includes a smart card 550 that includes a personal chip 553 that can store personal and marketing information and a digital code representing a monetary value. The system preferably includes means for transmitting a digital value corresponding to a monetary value to the memory (preferably on the personal chip 553) of the personal communication devices. The means for transmitting this data could be a smart card writer contained within the device or a separate card recorder or the receiver that receives transmissions via the antenna 533, for example. The smart card of the device 530a shown is detachable from the remainder of the device and held in place by clips 551. When the smart card 550 is stored in the personal communication device 530a, the personal chip 553 is preferably in a position where it can be easily read from and written to by the hardware in the remainder of the device 530a.

By virtue of the detachable smart card feature, each smart card 550 can be used in a plurality of different personal communication devices 530a and each personal communication device 530a can accept a plurality of different smart cards. Thus, for example, a single communication device 530a could be used as a wireless smart card reader/writer for a plurality of smart cards.

The device 530a includes a full display, which allows use Internet links to reach vendors, merchants and service providers. The user is also presented with options to call, i.e., talk to the restaurant directly or link, i.e., connect via the Internet to the restaurant's home page immediately. A visual indication of range 557 (such as a series of lit/unlit blocks) may be displayed to provide a convenient user interface to select the range of the CPL system.

Again, the device may have one or more sponsors. The sponsorship could take many forms, but in the embodiment, shown in Fig. 7C, the personal communication device is co-branded with sponsors' names 538 and includes several dedicated "FIND" button 539. The FIND button 539 in this example is preferably programmed to find the nearest sponsor location(s) with a single press of a button.

As noted previously the promotional co-branded communication device could, for example, be used by a financial institution to direct customers to their nearest branch or ATM anywhere in the country and or a national franchiser such as STARBUCKS® or McDonald's® could sponsor personal communication devices that direct customers to their nearest location.

Placing a name brand sponsor on the otherwise generic menu of choices could provide a less elaborate form of sponsorship.

In addition, and consistent with the incentive program of the present invention, the personal communication device could be integrated into an incentive program whereby the user could earn points or increase a variable redemption rate by reviewing advertisements or other information delivered over the personal



communication device (note also, the application in the context of the previously described Internet loyalty program). The advertisements could be sent in response to the user pressing a dedicated button such as the "FIND" button 539. The points earned could be stored in memory (preferably on the detachable smart card 550) and redeemed for free airtime the amount of which could depend on a variable redemption rate.

As shown in Fig. 7C, the personal digital communication device 550a can include conventional digital cellular phone features including: a speaker 550s and mouthpiece 550m; a SCROLL BUTTON 531 to allow the user to scroll through menus, sub-menus, and phone book; a TALK button 532 that dials the number on the display; a FIXED ANTENNA 533; a POWER KEY 534 to press and hold to turn the phone on or off; SOFTKEYS 535 whose current function is displayed adjacent the key on the display; an END button 536, which is pushed to end a phone call; an LCD display 537 and a set of conventional 12 key array of alphanumeric keys ranging from 1-0 and including \* and #.

One advantage of this form of messaging is that the messaging through different cell systems can be standardized so that the system can be used in any geographic location.

There are various changes and modifications that may be made to the invention as would be apparent to those skilled in the art. However, these changes or modifications are included in the teaching of the disclosure, and it is intended that the invention be limited only by the scope of the claims of any patent to issue from this application.